

**FINAL ADDENDUM TO
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
MILITARY CONSTRUCTION
AT BUCKLEY AIR FORCE BASE, COLORADO**

6 May 03

Prepared by
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Buckley Air Force Base (AFB) has recently identified an abandoned skeet range at the site of the Proposed Action, which is constructing a Wing Headquarters Facility (HQ). This addendum to the Supplemental Environmental Assessment Military Construction, dated January 2003, includes the following changes that address the environmental impacts from the skeet range.

1. The following paragraphs are added to Section 3.4.1 – Soils (Affected Environment)

The proposed site is located on a former skeet range, where lead shot from shotgun discharge and debris from shattered clay targets (pigeons) remains in surface soils. Over a very long time period, lead could leach from shot and polynuclear aromatic hydrocarbons (PAHs) could leach from clay target debris. The skeet range was constructed in 1942.

Earliest aerial views of the skeet range reveal four adjacent V-shaped firing areas facing north-northeast (Figure 1). Shot may have fallen anywhere within a 180 degree arc from zero to 680 feet down range of the center of each V-shaped firing area. However, shot most likely fell within the same arc from 375 to 600 feet down range. Deposition of clay target debris is less predictable but probably did not extend as far down range as shot.

Several aerial photos from 1942 to 1982 have been examined to estimate the approximate period of usage of each of the four skeet fields. Arbitrarily numbering the skeet fields 1 through 4 from west to east, the following table describes their probable periods of usage:

<u>Skeet Field</u>	<u>Start Date</u>	<u>End date</u>
1 (western most)	1942	1969 to 1975
2	1942	1965 to 1969
3	1942	1945 to 1959
4 (eastern most)	1942	1945 to 1959

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14. ABSTRACT This EA evaluates the potential environmental impacts from implementing the Proposed Action. The EA has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the Proposed Action. Specific activities to be performed as part of the Proposed Action include: constructing a Fitness Center; Wing Headquarters Facility; Visitors Quarters (VQ); Temporary Lodging Facility (TLF); and a Civil Engineering (CE) warehouse. In addition, the Proposed Action includes the expansion of Buildings 1000, 1006, and 1007; and the demolition of Buildings 25, 1011, 1611, 1620, and 1631.					
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In 2001, a 100-foot-wide road, Aspen Street, was re-located across the eastern portion of the former range. The western part of the former skeet range appears mostly undisturbed. The western most V-shaped firing area (Field 1) is clearly evidenced by pea gravel paths, concrete floors of former target houses, and a few firing stations. The V-shaped firing area of Field 2 is barely discernible by faint pea gravel paths. Clay target debris litters the area extensively.

The firing areas lie within the Proposed Action Wing Headquarters construction area, including the building area itself. Soil samples were collected from the expected shot fall zone and screened to isolate lead shot. Lead shot counts range from zero to 14.5 shot per cup of soil. To assess the potential for fine-grained lead from muzzle exhaust to be present in soils, soil samples collected from the V-shaped firing areas were analyzed for total lead. Results range from 12 to 230 parts per million (ppm).

The Front Range background lead level in soils is considered to be 130 ppm (the upper end of the expected 95 percent range of the distribution of values measured in samples from the top 15 centimeters of soil) according to *Assessment of Geochemical Variability and a Listing of Geochemical Data for Surface Soils of the Front Range Urban Corridor*, 1994. The United States Environmental Protection Agency (USEPA) Region 9 residential and industrial Preliminary Remediation Goals are 400 ppm and 1,000 ppm, respectively. The proposed Colorado residential soil remediation objective is 400 ppm.

The two soil samples collected from the V-shaped firing areas that yielded the highest total lead results (230 ppm) were also analyzed by the total characteristic leaching procedure (TCLP) to determine the potential for lead leaching into groundwater. Both samples were non-detects. Furthermore, the sample yielding the highest number of lead shot (14.5/cup of soil) was analyzed by TCLP for lead leachate (after the lead shot was removed). Again, the results were non-detect.

Finally, one screening soil sample was collected from the six inch interval of soil below target debris in the area of densest debris deposition. This sample underwent semi-volatile analysis to assess whether polynuclear aromatic hydrocarbons (PAHs) might remain in soil following clay target debris removal. Five of 15 PAH compounds analyzed for were detected at levels exceeding residential and industrial screening levels published by USEPA Region 9 or proposed by the Colorado Department of Public Health and Environment. No other semi-volatile organic compounds were detected. Additional samples have been taken to better define the level of PAHs in soils.

2. The following paragraphs are added to Section 4.3 – Soils (Environmental Consequences)

Proposed Action: The proposed action would have no impact on the current soils environment. The Air Force will complete the development of a plan to address the presence of lead shot and clay target debris in accordance with applicable regulations and in concert with CDPHE and USEPA Region 8. The plan will be executed in conjunction with the proposed construction. The Air Force would, at a minimum, reclaim or remove and dispose of lead shot and recycle or dispose of clay target debris

prior to construction. Lead shot would be sent to a smelter for reclamation of the lead or disposed off site per applicable laws and regulations. The target debris would be recycled as road base or other appropriate reuse, or disposed of off site per applicable laws and regulations. The Air Force is currently working with regulatory authorities to assess the need for additional removal of soils impacted by clay target-derived PAHs. If a response action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) is required, National Contingency Plan (40 CFR 300) procedures will be followed.

No Action Alternative: The consequences would be the same as the proposed action since the site would be addressed under the Department of Defense Environmental Restoration Program, if the proposed construction were to not occur. However, action could occur at a later date, based on relative risk evaluation.

3. The following paragraph was added to Section 3.7.3 – Water Resources (Affected Environment)

The proposed site is located on a former skeet range, lead shot from shotgun discharge and debris from shattered clay targets remains in the soil. Over a very long time period, lead could leach from shot, potentially threatening the quality of underlying groundwater. Erosion could result in the transport of potential contaminants into surface water. The soil samples collected from the V-shaped firing areas that yielded the highest total lead results (230 ppm) were also analyzed by the total characteristic leaching procedure (TCLP) to evaluate the potential for lead leaching into groundwater. Both samples were non-detects. Furthermore, the sample yielding the highest number of lead shot (14.5/cup of soil) was analyzed by TCLP for lead leachate (after the lead shot was removed). Again, the results were non-detect. These TCLP results indicate that groundwater has not been impacted by skeet range activities. There is no evidence of erosion causing transport to surface water under existing conditions.

4. The following paragraphs were added to Section 4.6 – Water Resources (Environmental Consequences)

Proposed Action: Analyses indicate that groundwater has not and is not likely to be impacted by skeet range activities. Eliminate the small remaining potential for groundwater to be impacted. Disturbance and movement of soils could potentially result in transport if appropriate controls were not implemented. The proposed removal of lead shot and clay target debris (and impacted soils, if necessary) will also alleviate this situation.

No Action Alternative: The consequences would be the same as the proposed action since the site would be addressed regardless of the proposed construction. However, action would occur at a later date.

4. This addendum has been sent to the following Agencies/Organizations:

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4. Public Notice:

This Addendum was made available to the public per the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and the U.S. Air Force Environmental Impact Analysis (EIAP) regulations. The public has 15 days to review the addendum and submit comments. A notice of availability for public review was published in the Denver Post/Rocky Mountain News, a Denver CO newspaper on 20 April 03 for a 15-day review period.

5. List of Prepares:

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Mark Spangler	460 CES/CEVR
Janet Wade	460 CES/CEV

**FINAL FINDING OF NO SIGNIFICANT IMPACT
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT MILITARY CONSTRUCTION
BUCKLEY AIR FORCE BASE, COLORADO**

AGENCY: United States Air Force, Buckley Air Force Base.

BACKGROUND: Pursuant to the National Environmental Policy Act, the Council on Environmental Quality regulations implementing the Act (40 Code of Federal Regulations [CFR] 1500-1508), Department of Defense Directive 6050.1, Regulation 5000.2-R and Air Force Instruction 32-7061, *The Environmental Impact Analysis Process* as promulgated in 32 CFR Part 989 and other applicable federal regulations. The United States Air Force (USAF) has prepared this Supplemental Environmental Assessment (SEA) to assess the potential environmental effects resulting from changing the location where the new Wing Headquarters Facility would be constructed at Buckley Air Force Base (BAFB). The location for the proposed Wing Headquarters Facility would now be south of the intersection of A-Basin Avenue on the west side of Aspen Street. This SEA is limited to the evaluation of the new location for the proposed Wing Headquarters Facility. The Proposed Action would provide: a centralized Wing Headquarters to support the beddown of the new 460th Air Base Wing (460 ABW). The Wing Headquarters Facility is required to support base mission objectives. The SEA was prepared to evaluate the environmental consequences of the new proposed location for the Proposed Action. All remaining activities to be performed as part of the Proposed Action under the Final Environmental Assessment Military Construction include: constructing a Fitness Center; Visitors Quarters (VQ); Temporary Lodging Facility (TLF) and a Civil Engineering (CE) warehouse; the expansion of Buildings 1000, 1006 and 1007; and the demolition of Buildings 25, 1011, 1620, 1631 and 1632. The affected environment and the potential environmental effects resulting from these activities remain unchanged from those presented in the Final Environmental Assessment Military Construction, dated November 2001.

An abandoned skeet range was discovered subsequent to the preparation of the SEA. An addendum to the SEA has been prepared and incorporated into the SEA at Appendix F.

PROPOSED ACTION: The Air Force proposes to construct a new Wing Headquarters Facility located approximately 1,400 feet south of the intersection of A-Basin Avenue on the west side of Aspen Street.

FACTORS CONSIDERED IN DETERMINING THAT NO ENVIRONMENTAL IMPACT STATEMENT IS REQUIRED: The SEA analyzed the environmental impacts of the Proposed Action and the No Action Alternative, taking into account all relevant environmental resource areas and conditions related to the new Wing Headquarters location. The Air Force examined the following resource areas and conditions in the SEA and found that the Proposed Action would either have no effect, or an insignificant impact, on: cultural resources, environmental justice, geology, hazardous materials management, hazardous waste management, health and safety, land use, socioeconomic, transportation, utilities (including water, wastewater, solid waste, electricity and natural gas) and water resources (other than storm water). Only air quality, biological resources, Installation Restoration Program, soils, noise and storm water (water resources) were considered to have a potential impact on the newly proposed site and these

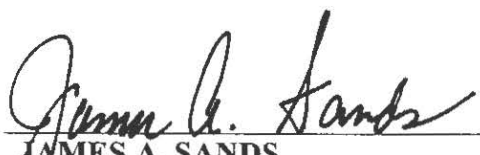
resources were reexamined in detail for a potential significant impact on the environment. Soil and Water resources were addressed in the Addendum to the SEA. The Environmental Assessment of Military Construction, Buckley Air Force Base, Colorado, dated November 2001 and the Supplemental Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado, dated January 2003 (SEA) are incorporated by reference. The SEA includes the Addendum to the SEA that was prepared April 2003.

PUBLIC NOTICE: The National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations and the U.S. Air Force Environmental Impact Analysis Process (EIAP) require public review of the SEA and the subsequent Addendum to the SEA prior to Finding of No Significant Impact (FONSI) approval and implementing the proposed action.

The public had 30 days to review and submit comments on the SEA. The public comment period ended on January 10, 2003. The comments and concerns submitted by the public are incorporated into the analysis of potential environmental impacts as part of the final SEA.

The public had 15 days to review and submit comments on the Addendum to the SEA. The public comment period ended on 5 May 03. The comments and concerns submitted by the public are incorporated into the analysis of potential environmental impacts as part of the final SEA.

FINDING OF NO SIGNIFICANT IMPACT: Based on requirements of the National Environmental Policy Act, the Council on Environmental Quality and CFR Part 989, I conclude that the environmental effects of the Proposed Action are not significant and therefore, an environmental impact statement will not be prepared. An availability notice for public review was published in the Denver Post/Rocky Mountain News, a Denver CO newspaper, on 11 December 2002 for a 30-day review period of the SEA and on 20 April 2003 for a 15-day review period of the Addendum to the SEA. Printed copies of the SEA and Draft FONSI were placed in the public libraries in Aurora and Denver CO for dissemination. The signing of this FONSI completes the U.S. Air Force EIAP.



JAMES A. SANDS
Colonel, USAF
Commander, 460th Air Base Wing

19 MAY 03

Date

**FINAL
ENVIRONMENTAL ASSESSMENT
FOR
BUCKLEY AIR FORCE BASE
MILITARY CONSTRUCTION
BUCKLEY AIR FORCE BASE, COLORADO**



Prepared for

U.S. Air Force Space Command

by

Headquarters Air Force Center for Environmental Excellence
Environmental Analysis Division
Brooks Air Force Base, Texas 78235-5363

November 2001

**COVER SHEET
FINAL ENVIRONMENTAL ASSESSMENT

OF

MILITARY CONSTRUCTION

AT BUCKLEY AIR FORCE BASE, COLORADO**

- a. Responsible Agency: Department of the Air Force
- b. The Proposed Action analyzed in this Environmental Assessment (EA) includes the demolition of existing facilities, and the construction of new facilities at Buckley Air Force Base (BAFB).
- c. Written comments and inquiries regarding this document should be directed to:

Chief, Environmental Management
Stop 26
660 South Aspen Street
Buckley Air Force Base, Colorado, CO 80011-9551
303-677-9402
- d. Designation: Final Environmental Assessment (EA)
- e. Abstract: This EA evaluates the potential environmental impacts from implementing the Proposed Action. The EA has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the Proposed Action. Specific activities to be performed as part of the Proposed Action include: constructing a Fitness Center; Wing Headquarters Facility; Visitors Quarters (VQ); Temporary Lodging Facility (TLF); and a Civil Engineering (CE) warehouse. In addition, the Proposed Action includes the expansion of Buildings 1000, 1006, and 1007; and the demolition of Buildings 25, 1011, 1611, 1620, and 1631.
- f. The comment period ended on October 25, 2001.

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FINAL
FINDING OF NO SIGNIFICANT IMPACT
MILITARY CONSTRUCTION
BUCKLEY AIR FORCE BASE, COLORADO

AGENCY: United States Air Force, Buckley Air Force Base.

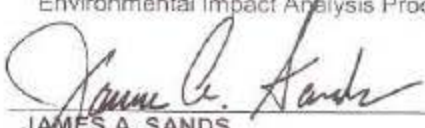
BACKGROUND: Pursuant to the National Environmental Policy Act, the Council on Environmental Quality regulations implementing the Act (40 Code of Federal Regulations [CFR] 1500-1508), Department of Defense Directive 6050.1, Regulation 5000.2-R, and Air Force Instruction 32-7061, *The Environmental Impact Analysis Process* as promulgated in 32 CFR Part 989, and other applicable federal regulations, the USAF conducted an assessment of the potential environmental consequences of the Proposed Action and the No Action Alternative. The Proposed Action is to provide the USAF a Fitness Center that meets USAF standards; to provide a centralized Wing Headquarters to support the beddown of the new Air Base Wing (ABW); to provide adequate living quarters to accommodate transient military personnel and their families (VQ and TLF); to provide a properly configured Civil Engineering (CE) Warehouse in support of mission requirements; to expand facilities in Buildings 1000, 1006, and 1007; and to demolish Buildings 25, 1011, 1611, 1620, and 1631 to reduce long-term maintenance costs.

PROPOSED ACTION: The Air Force proposes to construct a Fitness Center, Wing Headquarters Facility, Visitors Quarters (VQ); Temporary Lodging Facility (TLF); and a CE warehouse. Additional aspects of the Proposed Action include the expansion of Buildings 1000, 1006, and 1007; and the demolition of Buildings 25, 1011, 1611, 1620, and 1631.

Factors Considered in Determining That No Environment Impact Statement is Required: The EA analyzed the environmental impacts of alternatives to the Proposed Action taking into account all relevant environmental resource areas and conditions. The Air Force has examined the following resource areas and conditions and found that the Proposed Action will either have no, or inconsequential impact on: air quality, biological resources, cultural resources, geology and soils, hazardous substances, land use, noise, socioeconomics and environmental justice, transportation, utilities, and water resources. The Environmental Assessment, Military Construction, dated November 2001, is incorporated by reference.

Public Notice: The National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and the U.S. Air Force Environmental Impact Analysis Process require public review of the EA prior to Finding of No Significant Impact (FONSI) approval and implementing the proposed action. The public had 30 days to review and submit comments on the EA. The public comment period ended on October 25, 2001. The comments and concerns submitted by the public are incorporated into the analysis of potential environmental impacts as part of the EA.

FINDING OF NO SIGNIFICANT IMPACT: Based on requirements of the National Environmental Policy Act, the Council on Environmental Quality, and CFR Part 989, I conclude that the environmental effects of the Proposed Action are not significant, and therefore, an environmental impact statement will not be prepared. An availability notice for public review was published in the Denver Post and the Rocky Mountain News, a Denver, CO newspaper, on September 25, 2001 for a 30-day review period. A hard copy of the EA and Draft FONSI was placed in the public library in Aurora, CO for dissemination. The signing of this FONSI completes the Air Force Environmental Impact Analysis Process (EIAP).


JAMES A. SANDS
Colonel, USAF
Installation Commander

15 NOV 01
Date

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TABLE OF CONTENTS**Section 1.0 Purpose of and Need for the Proposed Action**

1.1	Background	1-1
1.2	Purpose and Need for Proposed Action	1-1
1.3	Location and Description of Buckley Air Force Base.....	1-2
1.4	Scope of the Environmental Review	1-2
1.4.1	Resources Not Analyzed in this EA.....	1-6
1.4.2	Resources Analyzed in this EA.....	1-7
1.5	Organization of the EA	1-7

Section 2.0 Description of Proposed Action and Alternatives

2.1	The Proposed Action	2-1
2.1.1	Detailed Description of Proposed Action.....	2-1
2.1.1.1	Construct Physical fitness Center	2-1
2.1.1.2	Construct Centralized Wing Headquarters	2-1
2.1.1.3	Construct Visitor's Quarters and Temporary Lodging Facility	2-5
2.1.1.4	Construct CE Warehouse and Expansion of Buildings 1000, 1006, and 1007	2-5
2.1.1.5	Demolition Activities	2-5
2.2	No Action Alternative	2-5
2.3	Identification of the Preferred Alternative.....	2-5
2.4	Comparison of the Environmental Impacts of All Alternatives	2-6

Section 3.0 Affected Environment

3.1	Physical and Demographic Setting	3-1
3.2	Air Quality and Regulations	3-2
3.2.1	Meteorology	3-4
3.2.2	Regional Air Quality	3-4
3.2.3	Baseline Air Emissions	3-5
3.2.4	Radon Gas	3-6
3.3	Biological Resources	3-6
3.3.1	Vegetative Communities.....	3-7
3.3.2	Wetlands	3-8
3.3.3	Wildlife	3-9
3.3.4	Sensitive Species	3-11
3.3.5	Sensitive Habitat	3-14
3.4	Cultural Resources	3-14

Table of Contents

3.4.1	Prehistoric Resources	3-15
3.4.2	Historic Resrouces	3-15
3.5	Environmental Justice	3-15
3.6	Geology, Soils and Topography	3-17
3.6.1	Geology	3-17
3.6.2	Soils	3-18
3.6.3	Topography	3-19
3.7	Hazardous Waste and Hazardous Materials Management	3-19
3.7.1	Wastes.....	3-19
3.7.2	Hazardous Materials	3-20
3.7.3	Asbestos	3-21
3.7.4	Lead-Based Paint	3-21
3.7.5	Polychlorinated Biphenyls	3-21
3.7.6	Pesticides	3-22
3.7.7	Installation Restoration Program Sites (IRP).....	3-22
3.8	Health and Safety	3-23
3.9	Land Use	3-24
3.10	Noise	3-25
3.11	Socioeconomics	3-25
3.11.1	Regional Economic Development	3-26
3.11.2	Sociological Environment	3-29
3.12	Transportation	3-30
3.13	Utilities (Infrastructure)	3-32
3.14	Water Resources.....	3-33
3.14.1	Surface Waters.....	3-33
3.14.2	Floodplains	3-34
3.14.3	Groundwater	3-34

Section 4.0 Environmental Consequences

4.1	Air Quality	4-1
4.1.1	Proposed Action	4-1
4.1.2	Air Conformity Analysis	4-3
4.1.3	No Action Alternative	4-4
4.2	Biological Resources	4-4
4.2.1	Proposed Action	4-5
4.2.2	No Action Alternative	4-5
4.3	Cultural Resources	4-5

Table of Contents

4.3.1	Proposed Action	4-5
4.3.2	No Action Alternative	4-6
4.4	Environmental Justice	4-6
4.4.1	Proposed Action	4-6
4.4.2	No Action Alternative	4-6
4.5	Geology, Soils and Topography	4-7
4.5.1	Proposed Action	4-7
4.5.2	No Action Alternative	4-7
4.6	Hazardous Waste and Hazardous Materials Management	4-7
4.6.1	Proposed Action	4-7
4.6.1.1	Hazardous Waste	4-7
4.6.1.2	Hazardous Materials	4-8
4.6.1.3	Asbestos	4-8
4.6.1.4	Lead-based Paint	4-8
4.6.1.5	PCBs	4-9
4.6.1.6	Pesticides	4-9
4.6.1.7	IRP Sites	4-9
4.6.2	No Action Alternative	4-9
4.7	Health and Safety	4-9
4.7.1	Proposed Action	4-9
4.7.2	No Action Alternative	4-10
4.8	Land Use	4-10
4.8.1	Proposed Action	4-10
4.8.2	No Action Alternative	4-11
4.9	Noise	4-11
4.9.1	Proposed Action	4-11
4.9.2	No Action Alternative	4-11
4.10	Socioeconomics	4-11
4.10.1	Proposed Action	4-11
4.10.2	No Action Alternative	4-12
4.11	Transportation	4-12
4.11.1	Proposed Action	4-12
4.11.2	No Action Alternative	4-12
4.12	Utilities (Infrastructure)	4-12
4.12.1	Proposed Action	4-12
4.12.2	No Action Alternative	4-13

Table of Contents

4.13	Water Resources	4-13
4.13.1	Proposed Action	4-13
4.13.2	No Action Alternative	4-13
4.14	Indirect and Cumulative Impacts.....	4-14
4.15	Unavoidable Adverse Impacts	4-16
4.16	Relationship Between Short-term Uses and Enhancement of Long-term Productivity	4-16
4.17	Irreversible and Irretrievable Commitment of Resources	4-16

5.0	List of Preparers	5-1
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6.0	Persons Contacted	6-1
	Distribution List Draft EA	6-3

7.0	References	7-1
------------	-------------------------	------------

8.0	Acronyms List	8-1
------------	----------------------------	------------

List of Tables

Table 2.4-1	Comparison of Environmental Consequences.....	2-6
Table 3.2-1	National and State Ambient Air Quality Standards	3-4
Table 3.2-2	1999 BAFB Air Emission Inventory	3-6
Table 3.3-1	Summary of Sensitive Species Identified at BAFB.....	3-11
Table 3.5-1	Per Capita Income	3-16
Table 3.5-2	Race Demographics by Zip Code.....	3-17
Table 3.11-1	Employment for the Region of Influence (ROI)	3-27
Table 3.11-2	Unemployment Rates for the Region of Influence (ROI).....	3-27
Table 3.11-3	Personnel Associated with Buckley Air Force Base 2001	3-28
Table 3.11-4	Summary of Gross Annual Payroll, Fiscal Year 1995	3-28
Table 3.11-5	Estimate of Number and Dollar Value of Indirect Jobs Fiscal Year 1995	3-29
Table 3.11-6	Total Annual Economic Impact Estimate, Fiscal Year 1995	3-29
Table 3.11-7	Population Trends in the Region of Influence (ROI)	3-30
Table 4.1-1	Estimated Pollutant Emissions from Construction Activities	4-2
Table 4.1-2	Proposed Action Air Emissions at BAFB.....	4-3
Table 4.14-1	Proposed Cumulative Emission within AQCR 36	4-15

List of Figures

Figure 1-1 Region Map	1-3
Figure 1-2 Location Map	1-5
Figure 2-1 Proposed Construction Locations	2-2
Figure 2-2 Proposed Demolition Site Locations	2-3

List of Appendices

Appendix A – AF Form 813	
Appendix B – Proposed Site Photographs	
Appendix C – Transmittal Letters	
Appendix D – Agency Comment Letters	
Appendix E – Notice of Availability	

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SECTION 1.0

PURPOSE OF AND NEED FOR PROPOSED ACTION

The United States Air Force (USAF) has prepared this Environmental Assessment (EA) to assess the potential environmental effects resulting from construction and demolition activities at Buckley Air Force Base (BAFB) that are required to support base mission objectives. Specific activities to be performed as part of the Proposed Action include: constructing a Fitness Center; Wing Headquarters Facility; Visitors Quarters (VQ); Temporary Lodging Facility (TLF); and a Civil Engineering (CE) warehouse. In addition, the Proposed Action includes the expansion of Buildings 1000, 1006, and 1007; and the demolition of Buildings 25, 1011, 1620, 1631, and 1632.

1.1 BACKGROUND

This section summarizes information on the purpose of and the need for the Proposed Action to meet the Base Operations Support at BAFB. The location of the projects, the scope of the environmental review, applicable regulatory requirements, and agency coordination are presented herein. In addition, the scope and organization of the EA are described.

1.2 PURPOSE AND NEED FOR PROPOSED ACTION

The purpose and need for the Proposed Action is to provide the USAF an adequate fitness center that meets USAF standards; to provide a centralized wing headquarters to support the beddown of the new Air Base Wing (ABW); to provide adequate living quarters to accommodate transient personnel and to provide short-term housing for military members and their families; to provide a properly configured CE warehouse in support of mission requirements; to expand shop facilities in Buildings 1006 and 1007; to expand Building 1000 to provide the Army National Guard additional space for training; to remove unwanted/unused structures in order to vacate areas that can be used to satisfy future base needs and reduce long-term maintenance costs (Buildings 25 and 1011); and to remove buildings for public and aircraft safety concerns (Buildings 1620, 1631, and 1632 are in the runway Clear Zone).

The Fitness Center is required to promote readiness, fitness, morale and a quality of life for military and civilian personnel by providing effective and efficient space for exercise, training, sports, and health and wellness testing. The Wing Headquarters/Administration Facility is required to house wing staff functions including a command post, a Special Compartmentalized Information Facility

(SCIF), public affairs, planning, safety, legal, inspector general, intelligence, contracting, comptroller, and manpower. The living quarters (VQ and TLF) are required to accommodate transient personnel from active duty, as well as reserve and guard tri-service components. Finally, the CE warehouse, and the expansion to Buildings 1000, 1006, and 1007 are needed to accommodate expanding mission requirements at BAFB.

1.3 LOCATION AND DESCRIPTION OF BUCKLEY AIR FORCE BASE

BAFB is located in Arapahoe County Colorado, on the eastern edge of the city of Aurora (see Figure 1-1) approximately five miles east of Denver and approximately ten miles southwest of Denver International Airport (see Figure 1-1). Figure 1-2 shows BAFB roads and major on-base features. The 460th ABW is the current host for BAFB. The base supports the following civilian and Department of Defense (DoD) tenants: 2nd Space Warning Squadron, Air Force Office of Special Investigations, Aerospace Data Facility, United States Property and Fiscal Office for Army and Air Force, Army Industrial Hygiene Midwest, 743rd Army Military Intelligence Battalion, Air National Guard (140th Wing), Army National Guard [2nd/35th Aviation Battalion, First Battalion, 89th Troop Command, 101st Army Band Detachment 1, 128th Mobile Public Affairs, HQ, STARC (Detachment 5 Medical Support, 8th Civil Support Team – formerly the 8th Weapons of Mass Destruction Civil Support Team), and Army Aviation Support], Navy/Marines (Navy/Marine Training Center, Battery P, 5th Battalion, 14th Marines, Marine Air Control Squadron 23), 566th Operations support Squadron, Air Force Technical application Center, Army Air Force Exchange Services, Defense Commissary Agency, and the Civil Air Patrol.

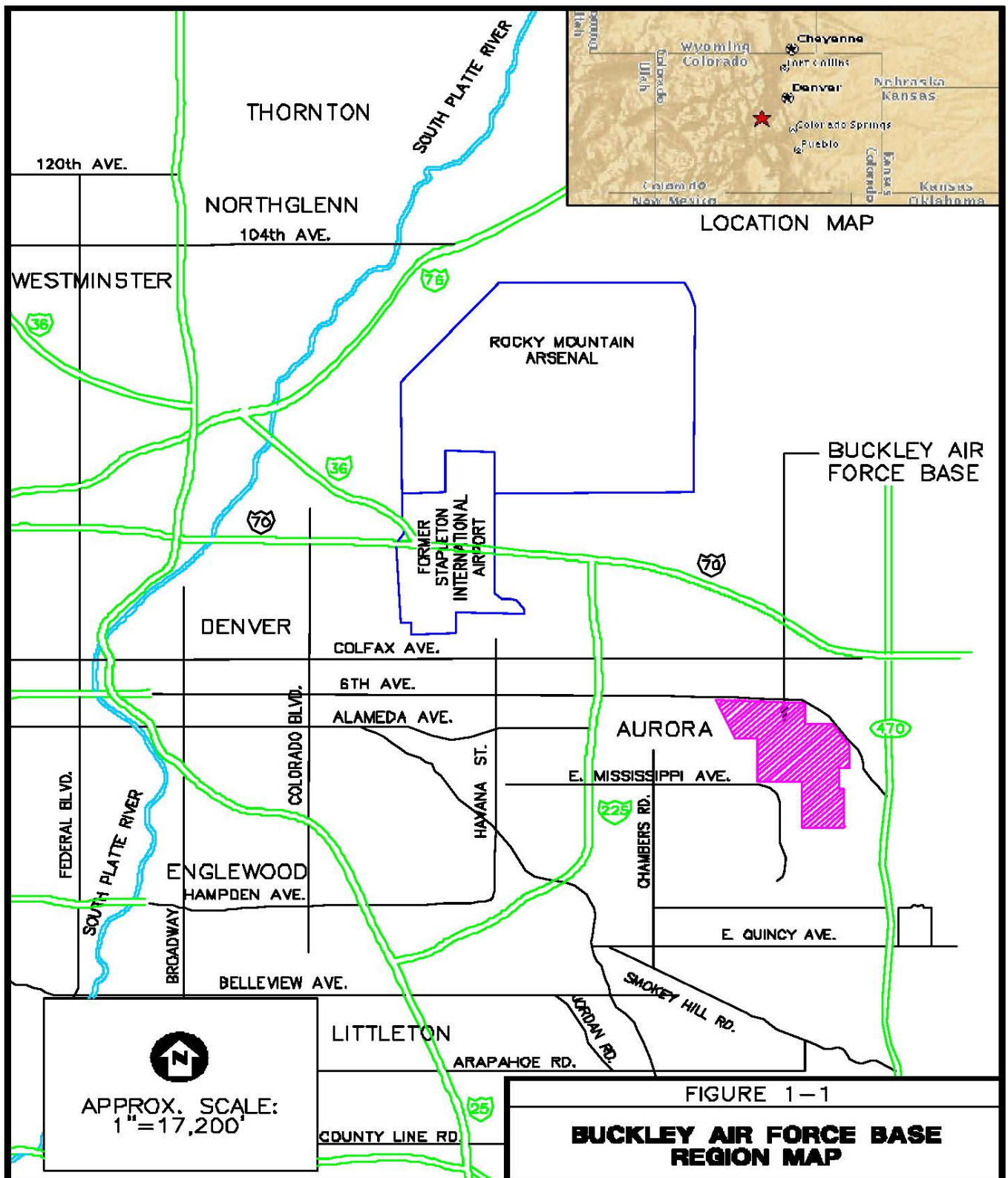
The Colorado Air National Guard operates and maintains the airfield located at BAFB, which is the only operating military airfield in the Denver Metropolitan Area. The airfield supports the training of the 120th Fighter Squadron; deployment needs of the 140th Wing, training of the Colorado Army Guard Aviation units, deployment needs of Army Guard, Reserve and Active Duty Units in this region, to include the Regional Civil Support Team, and provides services for government and military aircraft crossing the country. Other major activities on BAFB include the development of space and missile systems, satellite tracking, data reception, and early warning radar (Air National Guard, 1997).

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

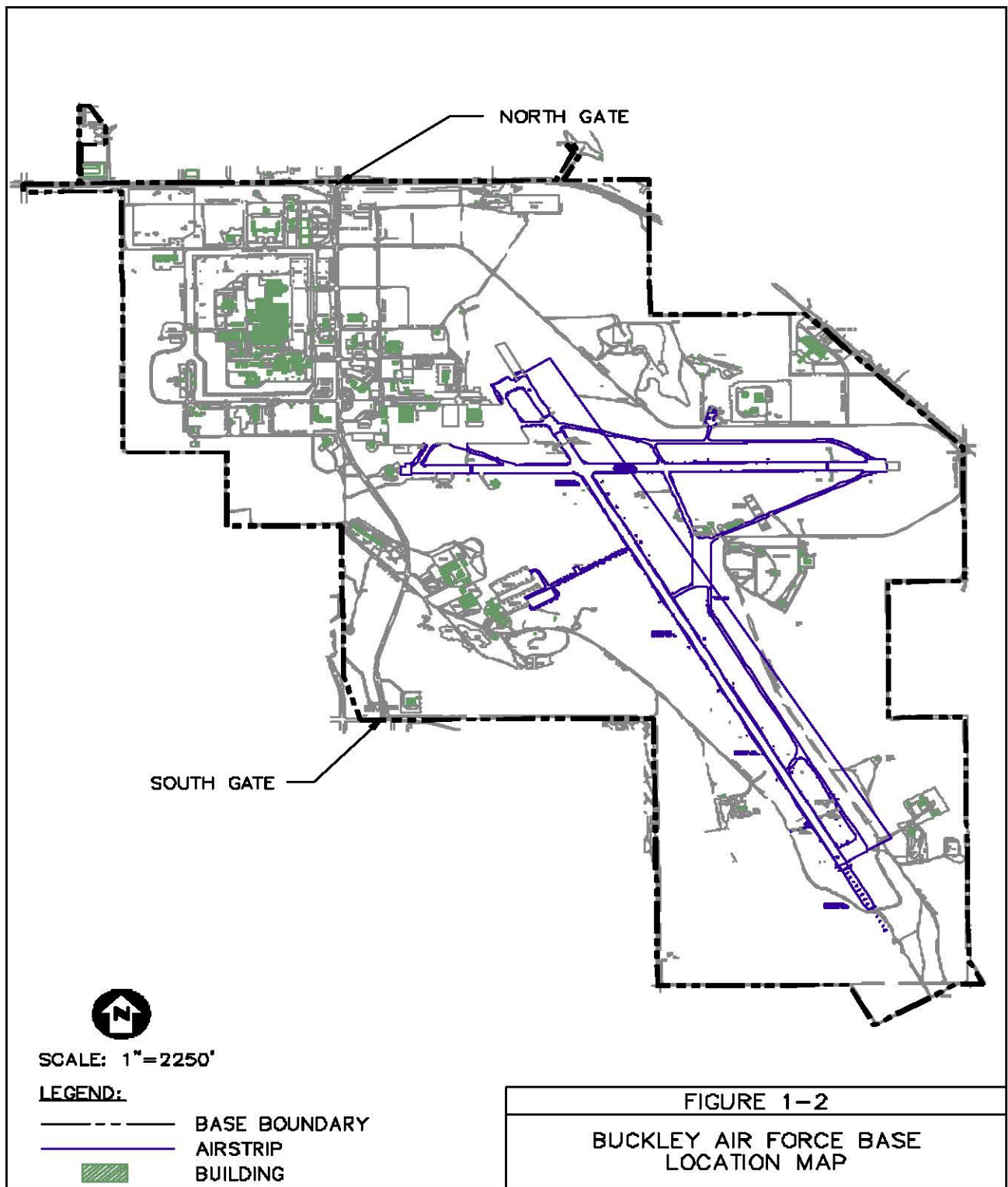
This environmental analysis has been conducted in accordance with the President's Council on Environmental Quality (CEQ) regulations, Title 40 of the Code of Federal Regulations (CFR) §§1500-1508, as they implement the requirements of the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. §4321, *et seq.*, and Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*,

Purpose and Need

as promulgated in 32 CFR Part 989. 32 CFR 989 addresses implementation of NEPA and directs Air Force officials to



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consider environmental consequences as part of the planning and decision-making process.

The study area for this EA includes BAFB and its region of influence (ROI). The ROI determines the geographical area to be addressed as the affected environment. Although the base boundary may constitute the ROI limit for some resources, potential impacts associated with certain issues (e.g., transportation and air quality) transcend these limits. This EA describes and addresses the potential environmental and socioeconomic impacts of the Proposed Action.

1.4.1 Resources Not Analyzed in this EA

The Air Force has examined the following resource areas and conditions and found that the Proposed Action would have no or inconsequential impact. These resources are summarized here to affirm their consideration in the EA.

Aircraft Safety

Construction associated with the Proposed Action is not planned within airfield Clear Zones (CZs), Accident Potential Zones, or obstruction-free areas. Therefore, the Proposed Action would not have adverse impacts on aircraft safety, nor would the Proposed Action be adversely impacted by aircraft operations.

Air Space

The Proposed Action would not impact any of the flying missions at BAFB; therefore, impacts on air space are not expected and are not analyzed in this EA.

Air and Rail Transportation

The Proposed Action and alternative to the Proposed Action do not involve air or rail transportation and are not expected to have impacts; therefore, these concerns are not analyzed in this EA.

Non-Ionizing Energy

No new facilities that have configurations or locations exposing personnel or materials to non-ionizing energy safety risks are proposed. Therefore, no safety impacts related to non-ionizing energy would occur.

Ordnance/Munitions

The Proposed Action and alternative to the Proposed Action do not involve ordnance/munitions and are not expected to have impacts; therefore, these concerns and are not analyzed in this EA.

1.4.2 Resources Analyzed in this EA

Potentially impacted resources were considered in detail to provide sufficient evidence and analysis for determining whether additional investigations would be required per 40 CFR Part 1508.9.

The resources analyzed include land use, ground transportation, utilities (including water, wastewater, solid waste, electricity, and natural gas), hazardous materials management, hazardous wastes management, Installation Restoration Program (IRP) sites, geology and soils, water resources, air quality, noise, biological resources, and cultural resources.

1.5 ORGANIZATION OF THE EA

This EA is organized into eight sections. Section 1.0 contains a statement of the purpose and need for the Proposed Action; defines the sites and locations for the Proposed Action; presents the scope of the environmental review; and outlines the organization of this EA. Section 2.0 of the EA describes the Proposed Action and the No Action Alternative(s), and presents a comparison of any potential environmental consequences from these alternatives. Section 3.0 contains a general description of the environmental resources that potentially could be affected by the Proposed Action or alternatives at each of the proposed or alternative sites. In addition, this section discusses the impacts of the No Action Alternative. Section 4.0 analyzes the environmental consequences; states any unavoidable environmental impacts; and describes any irreversible commitment of resources. Section 5.0 lists the preparers of the EA, and Section 6.0 identifies the persons and agencies consulted in the preparation of this EA. Section 7.0 provides a list of source documents relevant to the preparation of this EA. Section 8.0 is a list of acronyms used in the EA.

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SECTION 2.0

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 THE PROPOSED ACTION

The Proposed Action is to provide the Installation an adequate fitness center that meets USAF standards; to provide a centralized wing headquarters to support the beddown of the new Air Base Wing (460th ABW) at BAFB; to provide adequate living quarters to accommodate transient military personnel and their families (VQ and TLF); to provide a properly configured CE warehouse in support of mission requirements; to expand facilities in Buildings 1000, 1006, and 1007; and to demolish Buildings 25, 1011, 1620, 1631, and 1632 to reduce long-term maintenance costs and eliminate safety concerns.

Figure 2-1 indicates the locations of the proposed fitness center, proposed wing headquarters facility, the VQ and TLF, and the CE warehouse as well as the proposed expansions of Buildings 1000, 1006, and 1007, respectively. Figure 2-2 indicates the location of the proposed demolition locations (Buildings 25, 1011, 1620, 1631, and 1632).

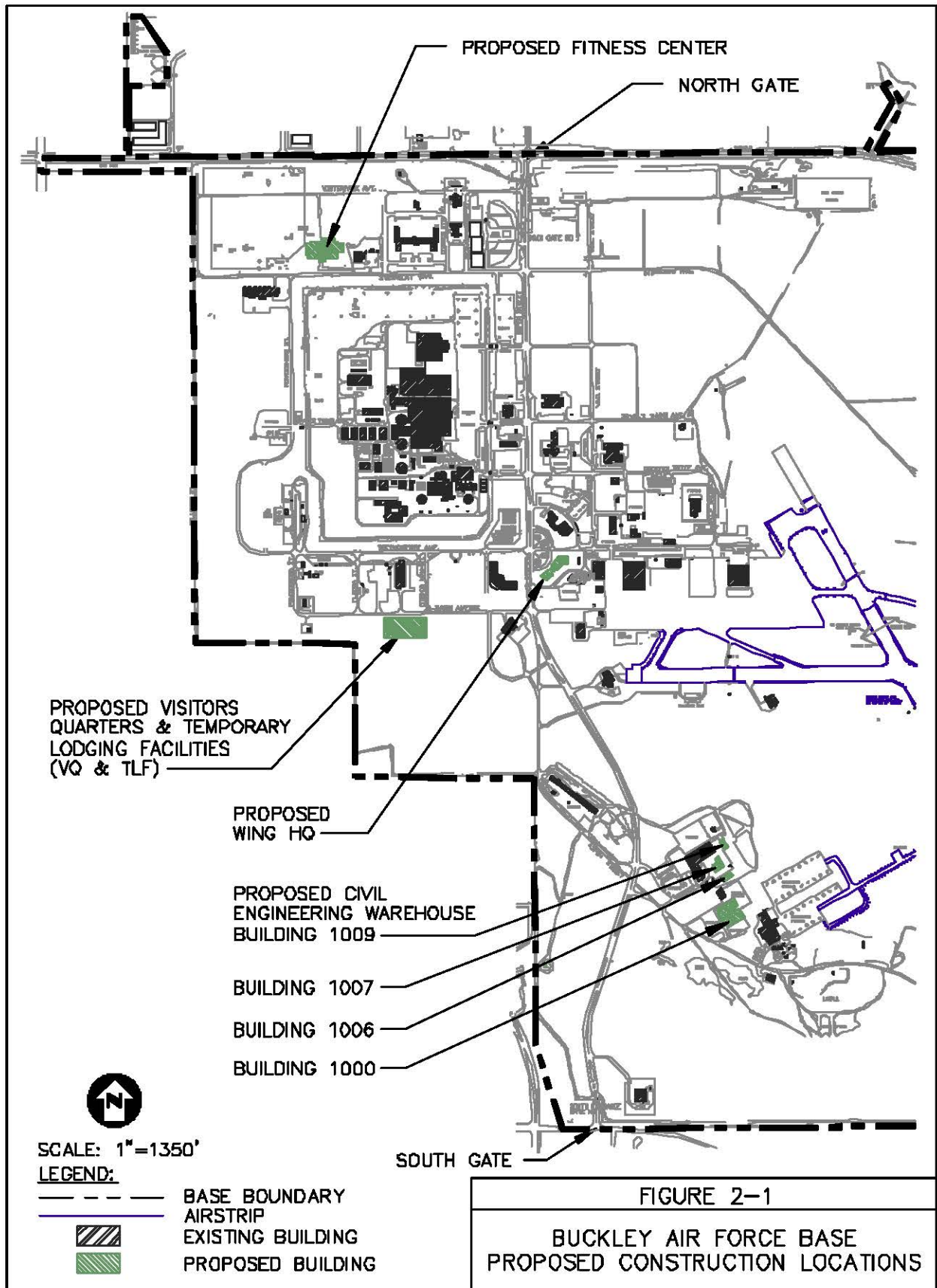
2.1.1 Detailed Description of Proposed Action

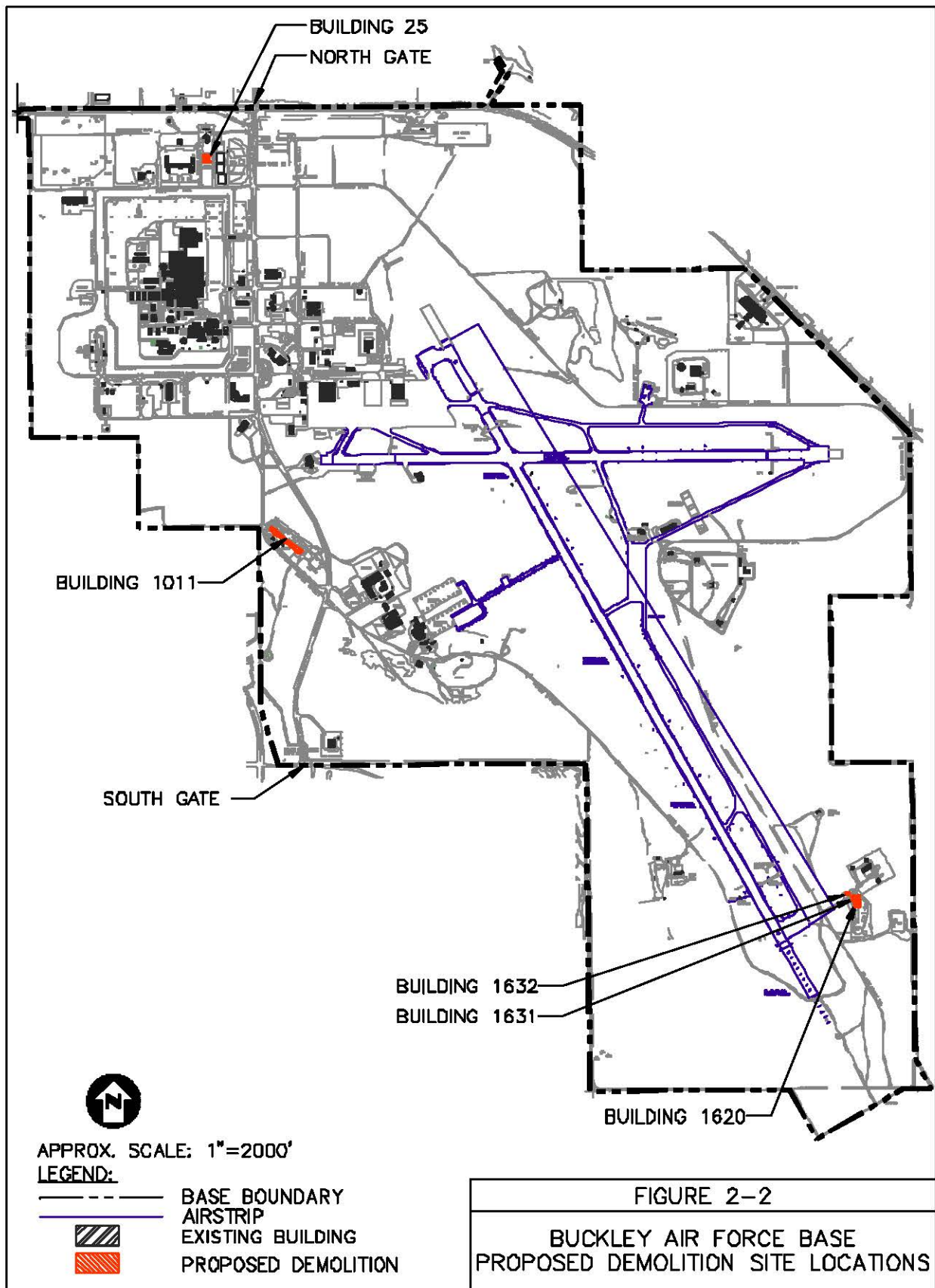
2.1.1.1 Construct Physical Fitness Center

Currently, fitness facilities at BAFB are located in three separate buildings. These buildings are not adequate to meet current and projected training and fitness needs. The largest building is located in a restricted area. It is only accessible to personnel possessing clearance to enter the area where it is located. The building is old, inefficient and lacks a majority of the core amenities now required by the USAF Fitness Facilities Design Guide. The new fitness center would be an approximately 54,500 square foot (sf) facility and would provide effective, efficient, and pleasant spaces for exercise, training, sports, and health and wellness testing.

2.1.1.2 Construct Centralized Wing Headquarters

This action would consist of constructing a new 49,065 sf Air Base Wing Headquarters/Administration Facility to support the functions previously described in Section 1.2 that will support beddown of the new ABW. There are currently no adequate facilities available to support the necessary personnel assigned to perform these functions. Currently, the wing staff functions are performed in many separate facilities at the base.





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2.1.1.3 Construct Visitor's Quarters and Temporary Lodging Facility

This action consists of constructing an approximately 37,950 sf VQ and 39,722 sf TLF to provide adequate living quarters required to accommodate transient personnel from active duty, as well as reserve and guard tri-service components (including the relocations of a hydrazine facility). Adequate space is required for living, administration, housekeeping, guest laundry, and reception and lobby area.

2.1.1.4 Construct Civil Engineering Warehouse and Expansion of Buildings 1000, 1006, and 1007

The action would consist of constructing a new warehouse for Base Operations Civil Engineering. The location of the proposed warehouse is on the north end of Building 1009 as shown in Figure 2-4. In addition, this action would also expand Buildings 1000, 1006, and 1007 also shown in Figure 2-4. The expansions to Buildings 1006 and 1007 are necessary to accommodate additional shop facilities. The addition to Building 1000 would provide the Army National Guard with additional space that is required to achieve proficiency in required training tasks and it provides room for the 8th CST that is currently located in a temporary trailer. The building would be used for administrative, storage, locker room, break room, classroom, vehicle material/ready bays, operations center, latrine, and shower space.

2.1.1.5 Demolition Activities

This action would consist of demolishing Buildings 25, 1011, 1620, 1631, and 1632. This would enable BAFB to remove unwanted/unused structures in order to vacate areas that can be used to satisfy future base needs and reduce long-term maintenance costs.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, BAFB would continue to utilize the substandard fitness facilities. The new Wing Headquarters, Visitors Quarters, TLF, and CE Warehouse would not be constructed and no modifications would occur to the existing buildings (Buildings 1000, 1006, and 1007). Buildings 25, 1011, 1620, 1631, and 1632 would remain and no demolition would occur.

2.3 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The preferred alternative is the Proposed Action. The environmentally preferred alternative is the No Action Alternative.

2.4 COMPARISON OF THE ENVIRONMENTAL IMPACTS OF ALL ALTERNATIVES

Table 2.4-1 compares the environmental effects of the Proposed Action and the No Action Alternative.

Table 2.4-1 Comparison of Environmental Consequences

Environmental Resource Areas	Proposed Action	No Action Alternative
Air Quality	Short-term – Minor Adverse	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Biological Resources	Short-term – Minor Adverse	Short-term – No Impacts
	Long-term – Minor Adverse	Long-term – No Impacts
Cultural Resources	Short-term – No Impacts*	Short-term – No Impacts
	Long-term – No Impacts*	Long-term – No Impacts
Indirect and Cumulative Impacts	Short-term – Minor Adverse**	Short-term – No Impacts
	Long-term – Minor Adverse**	Long-term – No Impacts
Environmental Justice	Short-term – No Impacts	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Geology and Soils	Short-term – Minor Adverse	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Hazardous Wastes and Hazardous Materials	Short-term – Minor Adverse	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Health and Safety	Short-term – Beneficial	Short-term – Adverse
	Long-term – Beneficial	Long-term – Adverse
Land Use	Short-term – No Impacts	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Noise	Short-term – Minor Adverse	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Socioeconomics	Short-term – Beneficial	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Transportation	Short-term - No Impacts	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Utilities	Short-term - No Impacts	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts
Water Resources	Short-term - Minor Adverse	Short-term – No Impacts
	Long-term – No Impacts	Long-term – No Impacts

Description of Proposed Action and Alternatives

* = No impacts would occur contingent upon all proposed buildings for demolition are determined to be ineligible for preservation to the NRHP (SHPO).

** = Potential adverse impacts pertain to the Black-tailed Prairie Dog.

SECTION 3.0

AFFECTED ENVIRONMENT

This section presents information on environmental conditions for resources potentially affected by the Proposed Action and the No Action Alternative described in Section 2.0. The environmental components addressed include relevant natural or human environments that are likely to be affected.

Under NEPA, the analysis of environmental conditions should address only those areas and environmental resources with the potential to be affected by the Proposed Action or alternatives; locations and resources with no potential to be affected need not be analyzed. The environment includes all areas and lands that might be affected, as well as the cultural and natural resources they contain or support. This section establishes the basis for assessing impacts of the alternatives on the affected environment provided in Section 4.0.

The ROI to be studied will be defined for each resource area affected by the proposed project. The ROI determines the geographical area to be addressed as the Affected Environment. Although the base boundary may constitute the ROI limit for some resources, potential impacts associated with certain issues (e.g., transportation, and air quality) transcend these limits.

3.1 PHYSICAL AND DEMOGRAPHIC SETTING

BAFB is located on a 3,250 acre parcel within the City of Aurora, in Arapahoe County, Colorado. Aurora is the second largest city in the Denver Metro area, and is approximately 5 miles east of Denver (COANG, 1997). The 460th ABW is the host organization at BAFB (formerly the 821st Space Group under the 21st Space Wing).

BAFB was named in honor of Lt. John Harold Buckley of Longmont, Colorado. He lost his life in 1918 when shot down behind German lines during a strafing mission in France. BAFB was first established in 1942 as an auxiliary field to the former Lowry AFB. BAFB is the home of the Colorado Air National Guard and was until recently an Air Guard installation licensed by the Air Force to the state of Colorado for National Guard use. In October 2000, the Air Force began providing infrastructure and quality of life services to the more than two dozen tenants. The transfer of base operating responsibilities to the active duty Air Force established a clear chain of command and adequate resources to provide multiple services to active-duty personnel at BAFB and ultimately the entire Denver Metro military community including guard members, reservists, and retirees (USAF, 2001).

3.2 AIR QUALITY AND REGULATIONS

Air quality in any given region is measured by the concentration of various pollutants in the atmosphere, typically expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Air quality is determined not only by the types and quantities of atmospheric pollutants, but also by surface topography, the size of the air basin, and by the prevailing meteorological conditions.

The Clean Air Act (CAA) of 1970 directed the United States Environmental Protection Agency (USEPA) to develop, implement, and enforce strong environmental regulations that would ensure cleaner air for all Americans. In order to protect public health and welfare, the USEPA developed concentration-based standards called National Ambient Air Quality Standards (NAAQS). The promulgation of the CAA was driven by the failure of nearly 100 cities to meet the NAAQS for ozone and carbon monoxide and by the inherent limitations in previous regulations to effectively deal with these and other air quality problems. The USEPA established both primary and secondary NAAQS under the provisions of the CAA. Primary standards define levels of air quality necessary to protect public health with an adequate margin of safety. Secondary standards define levels of air quality necessary to protect public welfare (i.e., soils, vegetation, property, and wildlife) from any known or anticipated adverse effects.

NAAQS are currently established for six air pollutants (known as "criteria air pollutants") including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur oxides (SO_x , measured as sulfur dioxide, SO_2), lead (Pb), and particulate matter. Particulate matter standards include particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}).

SO_2 in the atmosphere is converted to various conjugated sulfur compounds that form physically harmful vapors or micro droplets (e.g., sulfuric acid) when combined with particulate matter and water. Most SO_x compounds are irritants to the upper respiratory tract, and prolonged exposure can cause permanent lung damage.

Although O_3 is considered one of the criteria air pollutants and is measurable in the atmosphere, it is considered a secondary pollutant since O_3 typically is not emitted directly from most emissions sources. O_3 is formed in the atmosphere by photochemical reactions involving previously emitted pollutants or ozone precursors; therefore, O_3 is not considered when calculating emissions. Ozone precursors primarily consist of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from various emission sources. For this reason, an attempt is made to control O_3 through the control of NO_x and VOCs. On June 5, 1998, the USEPA issued the final rule identifying areas where the 1-hour NAAQS for ozone is no longer applicable. Under this rule, the 1-hour standard will not apply to areas in

which no violation of the previous 1-hour ozone standards have occurred. However, in areas in which past violations have occurred, the 1-hour ozone standard will continue to apply.

The CAA does not make the NAAQS directly enforceable. However, the CAA does require each state to promulgate a state implementation plan (SIP) that provides for implementation, maintenance, and enforcement of the NAAQS in each air quality control region (AQCR) in the state. The CAA also allows states to adopt air quality standards that are more stringent than the federal standards. The state of Colorado has adopted each of the NAAQS as the Colorado standards except for SO₂ as listed in Table 3.2-1. For SO₂, Colorado has adopted more stringent standards for each of the averaging times (COANG, 2000d).

BAFB is under the jurisdiction of the Colorado Department of Public Health and Environment (CDPHE), which is tasked with enforcing the CAA Title V Air Operation Permit (Permit No. 950PAR118 August, 1997). The stationary sources of regulated emissions at BAFB include 58 natural gas fired boilers, 33 heaters and furnaces that primarily use natural gas-dual fired boilers that have diesel back-up, 34 diesel generators, 4 gasoline-fired arresting barrier engines, 39 aboveground storage tanks (ASTs), and 2 degreasing stations. Abrasive paint removal is performed in the Corrosion Control Hangar (Building 800) using hand-held sanders. While mobile sources are not considered under the CAA Title V operating permit or the Colorado operating permit program, they are significant components of total base emissions. Mobile sources include vehicles and equipment (on paved and unpaved roadways), aerospace ground equipment (AGE), and aircraft operations (COANG, 2000d).

The 1999 air emission inventory performed at BAFB found that the installation is a major source of potential emissions from stationary sources exceeding 100 tons per year (tpy) of any criteria pollutants or 10 to 25 tpy of any single or combination of hazardous air pollutants (HAPs). The base is considered a major source of CO, NO_x, and SO₂. The Title V Air Operation Permit places basewide emission limits on all criteria pollutants but does not impose operational restrictions. However, the base developed its own operational restrictions as an internal strategy for compliance. The 1999 inventory shows BAFB to be well below permit limits for all pollutants (COANG, 2000d).

Table 3.2-1 National and State Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Primary NAAQS^{a,b,c}	Secondary NAAQS^{a,b,d}	Colorado Standards^{a,b}
Carbon Monoxide	8-hour 1-hour	9 ppm (10 mg/m ³) 35 ppm (40 mg/m ³)	No standard No standard	9 ppm (10 mg/m ³) 35 ppm (40 mg/m ³)
Nitrogen Dioxide	Annual	0.0543 ppm (100 µg/m ³)	0.0543 ppm (100 µg/m ³)	0.0543 ppm (100 µg/m ³)
Ozone	1 hour	0.12 ppm (235 µg/m ³)	0.12 ppm (235 µg/m ³)	0.12 ppm (235 µg/m ³)
PM ₁₀	Annual 24-hour	50 µg/m ³ 150 µg/m ³	50 µg/m ³ 150 µg/m ³	50 µg/m ³ 150 µg/m ³
Sulfur Oxides (measured as SO ₂)	Annual 24-hour 3-hour	80 µg/m ³ 365 µg/m ³ No standard	No standard No standard 1,300 µg/m ³	15 µg/m ³ 100 µg/m ³ 700 µg/m ³

PM₁₀ Particles with aerodynamic diameters less than or equal to a nominal 10 micrometers

a The 8-hour primary and secondary ambient air quality standards are met at a monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.08ppm.

b The NAAQS and Colorado standards are based on standard temperature and pressure of zero degrees Celsius and 760 millimeters of mercury.

c National Primary Standards: The levels of air quality necessary to protect the public health with an adequate margin of safety. Each state must attain the primary standards no later than three years after the state implementation plan is approved by the USEPA.

d National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the state implementation plan is approved by the USEPA.

3.2.1 Meteorology

BAFB has a semi-arid climate that is characteristic of the High Plains. It typically experiences low humidity, abundant sunshine, low precipitation, and large diurnal temperature fluctuations. The average annual temperature is 50.1 degrees Fahrenheit (°F). July is the hottest month with an average maximum temperature of 88.8 °F, and the coolest is January with an average minimum temperature of 15.5 °F. Precipitation fluctuates throughout the year with the wettest months occurring in spring and summer. The average annual precipitation is 16.3 inches. BAFB receives approximately 53 inches of snowfall per year. The prevailing winds within the local area are predominantly from the south and average 8.6 miles per hour (COANG, 1999b).

3.2.2 Regional Air Quality

The fundamental method by which USEPA tracks compliance with the NAAQS is the designation of a particular region as "attainment" or "non-attainment." Based on

the NAAQS, each state is divided into four types of areas for each of the criteria pollutants:

- 1) Those areas that are in compliance with the NAAQS (attainment)
- 2) Those areas that don't meet the ambient air quality standards (non-attainment)
- 3) Those areas that formerly were non-attainment, but currently are in maintenance of attainment status
- 4) Those areas where a determination of attainment/non-attainment cannot be made due to a lack of monitoring data (unclassifiable – treated as attainment until proven otherwise)

BAFB is located in Arapahoe County, which is classified by the CDPHE as an attainment area for CO, ozone (O₃), and PM₁₀. The attainment status has been reached based on monitoring data. Redesignation requests and Maintenance Plans have been submitted to the U.S. Environmental Protection Agency. So_x and NO_x must be treated as PM₁₀ precursors in the Denver metropolitan area since it is a PM₁₀ nonattainment area.

3.2.3 Baseline Air Emissions

BAFB is in the Denver Metropolitan Intrastate Air Quality Control Region 36. An air emissions inventory is an estimate of total mass emission of pollutants generated from a source or sources over a period of time, typically a year. The quantity of air pollutants generally is measured in pounds per year or tpy. Emission sources may be categorized as either mobile or stationary emission sources. Typically, mobile emission sources at Air Force installations include aircraft, surface vehicles, aerospace ground equipment, and weapons testing. Stationary emission sources may include boilers, generators, fueling operations, industrial processes, and burning activities among others. Accurate air emissions inventories are needed for estimating the relationship between emissions sources and air quality. The 1999 Air Emissions Inventory summary for BAFB, Colorado is presented in Table 3.2-2.

Vapor monitoring was performed on the two, 210,000 gallon, floating internal roof aboveground storage tanks in July 1999. The tanks store JP-8 and results showed eluting compounds to be measured at 1 part per million (ppm) for the top of each tank; 2 ppm for the North AST and 0 ppm for the South AST at the manway; and 0 ppm for both tanks at the midway location. The state of Colorado considers a detectable vapor loss when the VOC concentration exceeds 10,000 ppm.

3.2.4 Radon Gas

Radon is an odorless, tasteless radioactive gas. It is released by the breakdown of uranium-bearing granite deposits. Overexposure to radon can cause lung cancer. Building materials or fill soils used in construction can emit this gas. Radon is a naturally occurring gas in Colorado soils. The level at which the USEPA recommends consideration of radon mitigation measures is 4 picocuries per liter (pCi/L). BAFB screens for radon in accordance with Air Force policy for structures occupied on a full-time basis. Radon sampling was conducted between 1993 and 1997 at four buildings on base. The results range from 0.2 to 6.9 pCi/L (COANG, 2000b). All of the sampling results, except one, were below the USEPA standard of 4.0 pCi/L. Building 600 was the exception with radon levels of 6.9 pCi/L.

Table 3.2-2 1999 BAFB Air Emission Inventory

Pollutant Emission Sources	CO (tpy)	VOC (tpy)	SO_x (tpy)	NO_x (tpy)	PM₁₀ (tpy)
1998 AQCR 36 Emission Inventory ¹	4,761	13,727	34,732	37,079	3,211
BAFB Mobile Emissions ²	403	222	6.32	105	3.62
BAFB Stationary Emissions ²	19.4	10.3	11.8	81.2	2.65*
Conformity Rule <i>de Minimis</i> Threshold ²	100	NA	NA	NA	100

¹ Source: ANG 1999

² Source: BAFB 1999 Air Emissions Inventory

* Includes PM₁₀ emissions from the Rock Crusher that is permitted separately

tpy = tons per year

3.3 BIOLOGICAL RESOURCES

Biological resources include the native and introduced plants and animals in the project area. For discussion purposes, biological resources are divided into vegetation, wetlands, wildlife, sensitive species, and sensitive habitats. The ROI, for discussion of biological resources and potential impacts on these resources, includes on-site (where construction is proposed) and adjacent property.

BAFB is located in the Great Plains-Palouse Dry Steppe Province Ecoregion (USDA, 1995). This region is characterized by steppes or prairies composed of short bunched or sparsely distributed grasses. BAFB is located within the lowlands

of the South Platte River. Areas to the north, south, and east are largely undeveloped and support grazing and farming activities. Areas to the west are primarily urbanized (i.e., Denver Metropolitan area). Historically, the native climax vegetation for the region was predominantly mixed bunchgrass prairie (USAF, 2000a). The large acreage of open grass prairie, riparian corridor associated with East Tollgate Creek, and the open water at Williams Lake on BAFB provides a diversity of habitats that support many animal species. Wildlife found on BAFB is typical of the high plains of Colorado.

Numerous studies have been conducted for biological resources on and around BAFB. Biological resources at BAFB are addressed in various BAFB documents including the biological resource descriptions found in the Supplemental EA of Proposed Prairie Dog Management Practices at BAFB, June 2001, Base Master Plan, the BAFB Integrated Natural Resources Management Plan (INRMP), the Colorado National Heritage Program (CNHP), and the archives search report findings conducted for the base. The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) was used to provide information about wetland locations. The Colorado Division of Wildlife (CDOW) has species distribution results (including state listed and sensitive species) available for reptiles, amphibians, mammals, and birds, along with a data system containing element occurrence records (CDOW, 2001). The USFWS and the CDOW publish current lists of threatened and endangered species on their respective web sites (USFWS, 2001a, CDOW, 2001). All these data sources were used in the development of the biological section of this EA.

3.3.1 Vegetative Communities

BAFB is characterized as the plains grassland ecosystem that is composed of a random assortment of grass communities. The crested wheatgrass (*Agropyron cristatum*) community is the dominant vegetative community occurring on base, particularly near developed portions of the base. The midgrass prairie, the second most common vegetation type, occurs primarily in the southern region of the base and includes species such as western wheatgrass (*Agropyron smithii*).

Vegetation currently occupying BAFB is composed of both native and exotic species. The general plant communities consist of grassland prairie, riparian corridor, and exotic weed monocultures. The vegetative communities were classified into the following habitat types: bottomland meadow, cottonwood/willow, crested wheatgrass, meadow, midgrass prairie, ornamental trees, rubber rabbit brush, weedy forb, and yucca stand (COANG, 1999b). Typical vegetation types include buffalo grass (*Buchloe dactyloides*), grama (*Bouteloua* sp.), wheatgrass (*Agropyron* sp.), needlegrass (*Stipa* sp.), sunflower (*Helianthus* sp.), locoweed (*Oxytropis* sp.), prickly pear cactus (*Opuntia macrorhiza*), yucca (*Yucca glauca*),

and many wildflower species including blazingstar (*Nuttallia nuda*) and white prickly poppy (*Argemone polyanthemus*). Scattered shrubs such as sagebrush (*Seriphidium canum*), snakeweed (*Gutierrezia sarothrae*), and rabbit brush (*Chrysothamnus nauseosus*) provide additional cover along this grassland ecosystem. Trees along the shortgrass prairies are restricted to riparian corridors. Typical trees of the plains include cottonwood (*Populus sargentii*), willow (*Salix* sp.), and box elder (*Acer negundo*) (Guennel 1995).

Grassland communities, the predominant habitat on base, support numerous ground-nesting birds, such as the western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), and western burrowing owl (*Athene cunicularia*). In addition, open grasslands on BAFB support large populations of black-tailed prairie dog (*Cynomys ludovicianus*).

Biological resources at the Proposed Action sites include:

Buildings 25, 1000, 1006, 1007, 1011, 1620, 1631, and 1632: Habitat present at these buildings includes maintained turf grass and typical landscaping species that are found throughout BAFB. Resources present are limited due to the surrounding disturbances including buildings, paved surfaces, and parking areas.

Proposed VQ/TLF facility and Fitness Center: The proposed facility site is comprised of open grassland habitats and supports associated wildlife detailed in Section 3.3. Active black-tailed prairie dog burrows were identified during the January 2001 site visit.

Proposed Wing Headquarters Facility and the CE Warehouse: The proposed facility site is comprised of open grassland habitats and supports associated wildlife detailed in Section 3.3. Active prairie dog burrows are located in the proposed Wing Headquarters area.

3.3.2 Wetlands

Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE, 1987). Areas that periodically are wet but do not meet all three criteria (hydrophytic vegetation, hydric soils, and wetland hydrology) are not jurisdictional wetlands subject to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) nor to the swampbuster provision of the Federal Flood Security Act. Areas that have been disturbed or that are classified as problem area wetlands, however, may not meet all three criteria as a result of natural or man-induced reasons, yet still are considered wetlands.

Wetlands generally include swamps, marshes, bogs, and similar areas (33 *CFR* 328). Wetlands are important natural systems because of the diverse biological and hydrologic functions they perform. These functions may include water quality improvement, groundwater recharge, nutrient cycling, wildlife habitat, stormwater storage, and erosion protection.

Wetlands are protected as a subset of the “waters of the United States” under Section 404 of the Clean Water Act (CWA). The term “waters of the United States” has broad meaning under the CWA and incorporates deep water aquatic habitats and special aquatic habitats (including wetlands). “Jurisdictional” waters of the United States are areas regulated under the CWA and also may include coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, vernal pools, and “other” waters that, if degraded or destroyed, could affect interstate commerce.

NWI maps identify a total of six wetlands areas on BAFB (USFWS 1989a, USFWS 1989b). The wetlands identified by the NWI maps would require a formal USACE jurisdictional determination to assess potential impacts if actions were performed in the wetlands. Two of these wetlands areas, classified as Palustrine Scrub/Shrub wetlands (USFWS, 1992), are within or adjacent to the East Tollgate Creek and Columbia Creek floodplains in the southwestern portion of the base. Williams Lake is classified as a Palustrine Open Water wetland (USFWS, 1992). Two small Palustrine Scrub/Shrub wetlands are located immediately north and south of Williams Lake. A small Palustrine Emergent wetland is located just south of Buildings 1502 and 1503 in the south-central portion of BAFB. No wetlands were identified at the Proposed Action sites in the NWI survey or during the January 2001 site visit.

3.3.3 Wildlife

BAFB maintains a large acreage of open grassland prairie, which is interspersed with several riparian corridors. The base has adequate habitat for numerous species that pose a safety hazard to the flying mission. BAFB is in the process of updating the Integrated Natural Resources Management Plan (INRMP) that would include a Fish and Wildlife Management Plan. Preliminary information gathered suggests that a majority of the habitat present on BAFB has a moderate to high value in relation to its ability to support the maximum native species richness of birds, mammals, reptiles, and amphibians.

A total of seven amphibian and nineteen reptile species occur in Arapahoe County and may occur on BAFB (COANG, 1999b). Twelve of the reptile species are snakes, including the bullsnake (*Pituophis melanoleucus*), plains hognose snake (*Heterodon nasicus nasicus*), and the prairie rattlesnake (*Crotalus viridis viridis*). Other common reptiles include the western painted turtle (*Chrysemys picta belli*)

and the northern prairie lizard (*Sceloporus undulatus garmani*). The great plains toad (*Bufo cognatus*) and plains spadefoot toad (*Scaphiopus bombifrons*) are among the amphibians that may be found at BAFB.

All native North American birds, their eggs, and nests are protected by the Migratory Bird Treaty Act (MBTA) of 1912, as amended. Resident bird species found to occur near BAFB include the western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), lark bunting (*Calamospiza melanocorys*), and sharp-tailed grouse (*Tympanuchus phasianellus*).

The burrowing owl (*Athene cunicularia*), American kestrel (*Falco sparverius*), Swainson's hawk (*Buteo swainsoni*), and prairie falcon (*Falco mexicanus*) are among the raptors found in the area. The wetland and riparian areas on base support ducks and geese, including northern shoveler (*Anas clypeata*), blue-winged teal (*Anas discors*), and Canada goose (*Branta canadensis*). Killdeer (*Charadrius vociferus*) and great blue herons (*Ardea herodias*) are shorebirds also found in association with water on base.

A number of small mammals exist on BAFB. Common rodents may include fox squirrel (*Sciurus niger*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), prairie vole (*Microtus ochrogaster*), black-tailed prairie dog (*Cynomys ludovicianus*), and several species of mice (*Peromyscus* spp.). Black-tailed prairie dogs are extremely abundant at BAFB and are a concern because they attract raptors to the runway that could create an increased aircraft strike hazard. An EA currently is being prepared for the proposed management practices of the black-tailed prairie dogs. This EA would prefer 1) the relocation of the prairie dogs on-base or off-base, 2) the transfer to a ferret breeding facility, and 3) using an U.S. Air Force Space Command and U.S. Department of Agriculture approved lethal rodent control when removal or relocation are not practicable. The base proposes non-lethal relocation methods to the extent possible rather than lethal control measures for black-tailed prairie dog issues.

Predators include the red fox (*Vulpes vulpes*), badger (*Taxidea taxus*) and coyote (*Canis latrans*) (COANG, 1999b). White-tailed deer (*Odocoileus virginianus*) and mule deer (*Odocoileus hemionus*) are among the larger herbivores on base. Pronghorn antelope (*Antilocapra americana*) that occur in the region have been excluded from the base by an exterior fence to prevent collision hazards to aircraft (COANG, 2000a).

The most prominent and abundant small mammal on BAFB is the black-tailed prairie dog. The black-tailed prairie dog is the only prairie dog species found at BAFB (COANG, 2000a). Black-tailed prairie dogs, as well as the numerous other

small mammalian species found on the base, provide an abundant food supply for foraging raptors and carnivorous mammalian species. The animals live in densely populated burrow colonies of 20 to 35 individuals per acre and can contain up to 30 to 50 burrow entrances per acre. A tunnel network that is 3 to 6 feet deep and approximately 15 feet long generally results from colonies of this size. At the entrance to their burrows, black-tailed prairie dogs construct mounds of dirt up to 2 feet high and 10 feet in diameter. These mounds serve as lookout stations, prevent water from entering tunnels, and may enhance tunnel ventilation. Black-tailed prairie dog burrows, when vacant, may be inhabited by burrowing owls, rabbits, small rodents, snakes, lizards, insects, and spiders (Clippinger 1989, Hoogland 1995). Black-tailed prairie dogs are a major winter food source for bald eagles (*Haliaeetus leucocephalus*) ferruginous hawks (*Buteo regalis*), golden eagles (*Aquila chrysaetos*), and red-tailed hawks (*Buteo jamaicensis*) in this region (USAF, 2000a); these raptors also could use the ornamental trees near this area for resting sites or hunting perches.

A site reconnaissance survey on the Proposed Action sites was conducted in January 2001. Active black-tailed prairie dog burrows were identified at the following locations: the proposed VQ/TLF Facility, the property adjacent to Building 1011, Fitness Center, and the property adjacent to Buildings 1620, 1631, and 1632.

3.3.4 Sensitive Species

The USFWS lists species that are endangered or threatened and those that are proposed for endangered or threatened status. An endangered species is defined as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. Sensitive species include threatened, endangered, or species of special concern (USFWS, 2001; CDOW 2001).

Species (flora and fauna) listed by federal or state agencies as endangered, threatened, or of special concern and known to occur permanently or periodically, or having the potential to occur on base are shown in Table 3.3-1.

Table 3.3-1 Summary of Sensitive Species Potentially Located at BAFB

Common Name	Scientific Name	Status	
		Federal	State
Amphibians			
Northern leopard frog	<i>Rana pipiens</i>	--	SSC
Birds			
Baird's sparrow	<i>Amodrammus bairdii</i>	--	SSC
Burrowing owl	<i>Athene cunicularia</i>	--	T

Common Name	Scientific Name	Status	
		Federal	State
Ferruginous hawk	<i>Buteo regalis</i>	--	SSC
Mountain plover	<i>Charadrius montanus</i>	PT	SSC
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	T
Plains sharp-tailed grouse	<i>Tympanuchus phasianellus jamesii</i>	--	E
Mammals			
Black-tailed Prairie dog	<i>Cynomys ludovicianus</i>	C	SSC
Black-footed ferret	<i>Mustela nigripes</i>	E	E
Kit fox	<i>Vulpes macrotis</i>	--	E
Plants			
Colorado butterfly plant	<i>Gaura neomexicana</i> ssp. <i>coloradensis</i>	T	S1
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	T	S2

Notes: T=Threatened, E = Endangered, SSC = Species of Special Concern, PT = Proposed Threatened,
 C= Candidate Species, S1 = critically endangered in state, S2 = endangered or threatened in state

Source: USFWS, 2001a; USFWS 2001b; CDOW, 2001; CNHP, 2001

Black-tailed prairie dogs are federally classified by the USFWS as a candidate species and as a species of special concern by the state, and are abundant at BAFB. Black-tailed prairie dog colonies rapidly are being removed from the Denver region as a result of agricultural areas being converted to urban uses. The Colorado Division of Wildlife is encouraging public landowners to keep black-tailed prairie dogs that are present on their property, or allow for expansion or start up of new black-tailed prairie dog colonies. BAFB also is encouraged to maximize the acreage of black-tailed prairie dog colonies on portions of the base that are not critical to air traffic safety concerns.

The federally endangered black-footed ferret (*Mustela nigripes*) has not been found on base during four previous surveys.

Preble's meadow jumping mouse (*Zapus hudsonius preblei*) is listed by the state and federal government as threatened (USAF, 2000a). The Preble's meadow jumping mouse has an exclusive association with riparian vegetation near ponds and streams. Willow thickets or aspen forests with a well-developed grass understory are prime habitat for the mouse. Its diet is mostly grass seeds, and occasionally insects. Typically, the mouse will not move across roads, heavily grazed areas, or cultivated fields (USAF, 2000a). There is a potential that the Preble's meadow jumping mouse may occur on base in the vicinity of the creeks. A survey for rare or imperiled species and significant natural communities, conducted by the Colorado Natural Heritage Program on BAFB in June 2000, specifically

searched for Preble's meadow jumping mice and none was found on base (USAF, 2000a).

The swift fox (*Vulpes velox*), a small nocturnal fox, is a state species of special concern and prefers short to mid-grass prairie habitat. It is found in association with black-tailed prairie dogs that, along with other small vertebrates, comprise about 75 percent of the fox's diet (USAF, 2000a). The swift fox has not yet been identified as occurring on the base.

The bald eagle (*Haliaeetus leucocephalus*) is listed by the state and federal agencies as threatened. It occurs around lakes and rivers in the winter. It typically forages for fish but also is known to take small mammals, including black-tailed prairie dogs. Generally, winter habitat preferences for the bald eagle include a readily available food source associated with ice-free waters, diurnal perches, nocturnal roost trees, and low human activity. The bald eagle is a transient visitor to BAFB in the winter and is not known to breed in the immediate vicinity (USAF, 2000a).

The ferruginous hawk (*Buteo regalis*), a state species of special concern, is common in Arapahoe County (USAF, 2000a). It feeds almost exclusively on small mammals, including black-tailed prairie dogs and primarily nests in trees (USAF, 2000a). Ferruginous hawks are resident on the adjacent Prairie Conservation Center property and are likely to be present on BAFB.

The mountain plover (*Charadrius montanus*) is a candidate species proposed threatened for federal listing and a state species of special concern. The plover prefers open, arid lands that support short grasses, such as buffalograss and blue grama, and scattered cactus on the eastern plains of Colorado. The mountain plover's reported range ends near the eastern boundary of Arapahoe County, and it is unlikely to occur on BAFB (USAF, 2000a).

The burrowing owl (*Athene cunicularia*), a state-threatened species, is known to occur on base. Burrowing owls typically are present in the area from early March to late October and migrate out-of-state during the winter months. Burrowing owls typically occur in active black-tailed prairie dog towns and may be present in recently abandoned black-tailed prairie dog towns (USAF, 2000a). The burrowing owl also is protected under the Migratory Bird Treaty Act of 1912 and the Colorado Revised Statutes 33-2-105.

Ute ladies'-tresses, (*Spiranthes diluvialis*), federally listed as threatened, is an orchid found in seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated floodplains below 6,500 feet in elevation. According to the Colorado Natural Heritage Program (CNHP), current distribution of

the orchid does not include Arapahoe County. Although on-base surveys for the orchid are limited, the only potential habitat would be along the creeks.

The Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*), federally listed as threatened, prefers alluvial soils of drainage bottoms surrounded by mixed grass prairie, typically at elevations between 5,800 and 6,200 feet. According to the CNHP, current distribution of the Colorado butterfly plant includes wetland areas of Arapahoe County. This species could occur along the creeks on the base.

3.3.5 Sensitive Habitat

Sensitive habitats are those areas considered for protection due to their ecological value. They include wetlands, critical habitat for protected species, plant communities of limited or unusual distribution, and important seasonal use areas for wildlife. Wetlands are the only sensitive habitats known to occur on BAFB. A total of six potential wetlands are located on base, according to the NWI maps. These areas would require a USACE wetland evaluation to determine if they qualify for wetland protection under Section 404 of the Clean Water Act. These areas are found along the riparian corridors and currently are designated as bottomland meadow or cottonwood/willow association. The Proposed Action sites are not located within or adjacent to any identified sensitive habitats areas on BAFB.

3.4 CULTURAL RESOURCES

Cultural resources consist of prehistoric and historic sites including resources such as districts, buildings, structures and objects that are significant in American history, architecture, archaeology, engineering, and culture. Historic properties listed in or eligible for listing in the National Register of Historic Places (NRHP) are subject to protection or consideration by a federal agency in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended.

For this analysis, the ROI is synonymous with the Area of Potential Effect (APE), as defined by regulations implementing the National Historic Preservation Act (NHPA). The ROI for the analysis of cultural resources includes all property within the Proposed Action areas where ground disturbance or other impacts may occur.

Numerous laws and regulations require federal agencies to consider the effects of a proposed project on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the federal agency proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Officer (SHPO) or the Advisory Council on Historic Preservation). The primary law governing the treatment of cultural resources is the

NHPA, which requires a federal agency to consider potential impacts on historic properties from any proposed undertaking.

Only those potential historic properties determined to be significant under cultural resources legislation are subject to protection or consideration by a federal agency. Significant cultural resources, either prehistoric or historic in age, are referred to as "historic properties."

3.4.1 Prehistoric Resources

Previous cultural resource investigations have resulted in the identification of 35 prehistoric sites and 24 isolated finds with prehistoric components within the BAFB boundaries (COANG, 2000f). All of these resources have been determined by the SHPO to be ineligible for nomination to the NRHP based on the lack of integrity and inability to provide data that could further the understanding of the prehistory of the area.

The seven archaeological recorded sites were associated with the BAFB cantonment areas, the hospital area, a railroad grade, a trash scatter, and a trash dump.

3.4.2 Historic Resources

A total of 58 historic resources (55 WW II era buildings and 3 Cold War era buildings) and seven historic archaeological resources were recorded during the 1990 Historic Resources Survey at BAFB (COANG, 2000f).

In addition, a comprehensive, base-wide survey and subsequent evaluation of all facilities located on BAFB have not been performed. BAFB will be conducting an inventory this year, which includes the proposed demolition buildings - prior to initiating the Proposed Action. This survey and SHPO consultation should be accomplished by October 2001.

3.5 ENVIRONMENTAL JUSTICE

The ROI for Environmental Justice is the area, delineated by zip code, immediately surrounding BAFB. BAFB lies within the 80011 zip code area and is surrounded by the following zip codes: 80010, 80012, 80013, 80017, 80018, 80019, 80045, 80238, 80239, and 80249.

Environmental justice is a concept involving race and ethnicity data and the poverty status of populations within the ROI. On February 11, 1994, President Clinton enacted EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The purpose of this order is to avoid the disproportionate placement of any adverse environmental or economic impacts

from federal policies and actions on minority and low-income populations. Environmental justice analysis is performed to identify potential disproportionately high and adverse impacts from a Proposed Action and to identify alternatives that might mitigate these impacts.

In 1997, the per capita personal income ranged from \$21,457 in Adams County to \$34,264 in Arapahoe County (CDLE, 2000). Approximately 8.7 percent of persons lived in poverty in Colorado compared to 13 percent for the United States (U.S. Census Bureau, 2000). The U.S. poverty threshold varies by size of family and number of related children under the age of 18 per the U.S. Census Bureau. The poverty level for an average family of three (using the average household size for the ROI of 2.5 (CACI Marketing Systems, 1999) would be \$13,423 (U.S. Census Bureau, 2000) (See Table 3.5-1).

Table 3.5-1 Per Capita Income

Zip Code	1999 per Capita Income	Household Distribution		Median Household Income
		Income (%) less than 15,000	Income (%) 15,000 to 24,999	
80011	18,074	12.8	15.5	37,683
80012	13,141	8.6	11.4	42,976
80013	23,316	2.4	5.1	58,094
80014	31,680	5.7	8.6	50,487
80017	21,517	3.8	10.1	49,413
80018	25,353	7.5	8.0	47,072
80019	10,848	21.4	7.1	38,750
80045	15,970	7.0	15.2	35,213
80238	Information not available.			
80239	17,088	9.8	9.4	46,648
80249	24,037	0.5	3.5	62,868
Adams	18,010			41,476
Arapahoe	29,170			51,864
Denver	24,657			35,517
Douglas	41,021			81,914
Jefferson	27,327			54,830
Colorado	23,698	12.1	12.4	43,823
United States	20,566	15.8	13.4	39,831

Source: CACI Marketing Systems Sourcebook of Zip Code Demographics, 1999b.

Table 3.5-2, Race Demographics by zip code indicate that zip code 80239 has a disproportionately high minority population.

Table 3.5-2 Race Demographics by Zip Code

Zip Code/County	Race (%)							
	White		Black		Asian/Pacific		Hispanic Origin	
	1990	1999	1990	1999	1990	1999	1990	1999
80011	79.0	76.5	14.8	15.9	3.1	4.1	8.1	10.2
80012	78.1	74.9	14.0	15.1	5.6	7.3	6.7	8.4
80013	87.8	85.6	6.9	7.7	3.4	4.6	6.1	7.6
80014	90.4	88.4	5.6	6.3	2.9	3.9	3.7	4.8
80017	82.8	80.0	10.6	11.5	4.0	5.4	6.7	8.3
80018	94.8	93.8	2.6	3.1	1.5	1.9	2.0	2.6
80019	97.6	97.7	0.0	0.0	0.0	0.0	4.8	4.7
80045	78.8	75.7	12.8	13.8	4.3	5.8	11.1	14.5
80238	Information not available.							
80239	29.6	25.5	59.6	62.2	3.5	4.1	12.6	16.1
80249	69.1	63.5	21.5	24.5	4.0	5.3	10.1	13.2
Adams County	86.7	84.5	3.3	3.6	2.6	3.4	18.6	22.1
Arapahoe County	89.2	87.5	5.9	6.4	2.8	3.8	5.6	6.8
Denver County	72.1	68.4	12.8	14.1	2.4	3.0	23.0	27.1
Douglas County	97.2	96.6	0.7	0.8	0.8	0.8	3.2	3.9
Jefferson County	94.6	93.5	0.7	0.8	1.7	2.3	7.0	8.5
Colorado	88.2	87.9	4.0	4.1	1.8	2.4	12.9	14.7
United States	80.3	77.7	12.1	12.6	2.9	3.9	9.0	11.6

Sources: CACI Marketing Systems Sourcebook of Zip Code Demographics, 1999b and CACI Marketing Systems Sourcebook of County Demographics, 1999a.

3.6 GEOLOGY AND SOILS

3.6.1 Geology

BAFB is located within the Denver Basin. The Denver Basin is a structural depression that is 300 miles long and 200 miles wide. This depression was

created during a mountain building event referred to as Laramide Orogeny. The Denver Basin consists of geologic layers in excess of 13,000 feet thick that range in age from Late Pennsylvania through Quaternary. There are five principal stratigraphic units present within the Denver Basin: Fox Hills Sandstone; Laramie Formation; Arapahoe Formation; Denver Formation; and Dawson Arkosoe. The basal (compact) unit of the Denver Basin is Pierre Shale that underlies the Fox Hill Sandstone. Surficial material consists of several layers of unconsolidated alluvial gravels, sands, clays, and eolian material that were deposited in response to glacial and interglacial events (COANG, 1999b).

Coal reserves are present beneath the surface of BAFB; however, they are economically non-recoverable. Sand and gravel are mineral resources that also are also in the area, but they are not economically viable reserves (COANG, 1999b).

3.6.2 Soils

The U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS), recently renamed the Natural Resource Conservation Service (NRCS), mapped and classified the soils on BAFB in 1971. The major soil mapping units present on base include the Fondis-Weld, Alluvial land-Nunn and Renohill-Buick-Little associations. Other areas on base have been identified as gravel pits, rock outcrop complexes, sandy alluvial land, and terrace escarpments (COANG, 1999b).

The Fondis-Weld association covers most of the surface area on base. It consists of deep loamy soils that formed mainly in silty material deposited by the wind. The Alluvial land-Nunn association typically is found along floodplains and terraces mainly along East Tollgate Creek and Sand Creek and consists of soils that have moderate permeability and high water holding capacity. The Renohill-Buick-Little association is comprised of moderately deep, well-drained, loamy to clayey soils (COANG, 1999b).

The NRCS completed a site visit for soil use as potential cropland at BAFB in January 2001. The determination made by the NRCS was that "...it would not be feasible to introduce agricultural production on the base without the added cost of installing conservation practices and/or irrigation system (NRCS, 2001) ". Dry cropland soils were identified on-base as being of statewide importance. However, after a facility tour, few areas were recognized as having the potential to be converted to cropland, mainly due to parcel size and accessibility for farming operations.

3.6.3 Topography

The topography of BAFB is somewhat flat, with rolling uplands divided by northward and northwestward draining intermittent streams. Elevations on base range from 5,700 feet in the southeast corner to 5,470 feet in the northwest corner. BAFB is located within the western portion of the central high plains of Colorado to the west of the Great Plains. The base is approximately 50 miles east of the Continental Divide (COANG, 1999b).

3.7 HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT

3.7.1 Wastes

There are two classifications of wastes generated at BAFB: nonhazardous solid waste and hazardous waste. Nonhazardous solid waste is removed by a contractor for off-site disposal. Recyclables also are removed from the base by a contractor.

Hazardous wastes, as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, are substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity that may cause an increase in mortality, a serious irreversible illness, an incapacitating reversible illness, or pose a substantial threat to human health or the environment. In general, this includes substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare, or to the environment when released into the environment. In addition, hazardous substances and hazardous chemicals are regulated by the Emergency Planning and Community Right to Know Act (EPCRA) (42 U.S.C. Sections 11001-110505). Transportation of hazardous materials is regulated by the U.S. Department of Transportation (DoT) regulations within 49 CFR.

Normal operations at BAFB generate hazardous wastes as defined by the Colorado Code of Regulations (6 CCR 1007) as promulgated by RCRA. BAFB is regulated as a large quantity generator and maintains USEPA Identification Number CO9570025644 (COANG, b).

Hazardous wastes generated at BAFB include waste paint-related materials, washer sludge, paint chips, sealant, used oil, waste fuel, solvent, and epoxy resin. The responsibility for managing hazardous waste lies with the generating organization and the base Environmental Management Office (EMO) consisting of the Environmental Manager (EM). Thirteen hazardous waste generation points have been identified on the base, and each is considered an initial accumulation point where a maximum of 55 gallons of waste can be stored until capacity is exceeded. There is one central accumulation point (CAP) where an indefinite

quantity of hazardous waste is accumulated for up to 90 days, which is located at the north end of BAFB. The Defense Reutilization and Marketing Office (DRMO) at Fort Carson in Colorado Springs provides a contract-based hazardous waste disposal service to the installation. The DRMO initiates and monitors hazardous waste disposal contracts for regulatory compliance and maintains disposal documentation (COANG, b). A contractor transports the waste to the Treatment, Storage, and Disposal (TSD) location.

3.7.2 Hazardous Materials

Hazardous materials are those substances defined as hazardous by the comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. Sections 9601-9675), the Toxic Substances Control Act (15 U.S.C. Sections 2601-2671), and the Solid Waste Disposal Act, as amended by RCRA (42 U.S.C. Sections 6901-6992).

Operations at BAFB require the use and storage of hazardous materials. Hazardous materials management is the responsibility of each individual or organization.

Approximately 61 operations basewide use hazardous materials. Hazardous materials on base include various paints, pesticides, adhesives, batteries, hydrazine, propylene glycol, and Petroleum, Oils, and Lubricants (POL). BAFB uses the Environmental Management Information System (EMIS) to track hazardous materials brought on base. Each organization is charged with ordering the hazardous materials they use (COANG, b).

There are 77 ASTs at BAFB, 31 of which are registered with the Colorado Department of Labor and Employment and Storage Tank Registration. They store JP-8, glycol, fuel oil, mogas, diesel, liquid oxygen, liquid nitrogen, naphthalene, and used oil. There are two 210,000-gallon floating internal roof ASTs that store JP-8 at the POL storage facility (COANG, 2001). According to Environmental Office, all of the underground storage tanks (USTs) were removed from the base. The work was completed in 1997/1998. The base has applied for and been granted a waiver to install three 12,000-gallon USTs to store gasoline and diesel at the Army & Air Force Exchange Services (AAFES) station that is part of the new Base Exchange (BX). The waiver was granted in November 1999 (USAF, 1999b).

Emergency response to spills or releases of hazardous materials is governed by the requirements of CERCLA, EO 12580, and EPCRA. Under CERCLA, the resident agencies at BAFB and contractors are responsible for reporting releases of reportable quantities to the National Response Center within 24 hours. BAFB

maintains an Oil and Hazardous Materials Spill Prevention and Response Plan (COANG, 1995).

3.7.3 Asbestos

The current Air Force Policy is to manage or abate asbestos-containing material (ACM) in active facilities and remove ACM, following regulatory requirements before facility demolition. ACM is abated when there is a potential for asbestos fiber release that would affect the environment or human health.

The BAFB Asbestos Management Plan identifies procedures for management and abatement of asbestos. The Plan includes an ACM survey that covers 179 buildings on base. The Air Force requires that, prior to renovations or demolition of existing non-residential buildings, asbestos sampling be performed by a contractor to determine the percent and type of asbestos in the material. Asbestos-containing material would be removed prior to the demolition or renovation of any facility in accordance with applicable federal, state, and local regulations prior to demolition activities (COANG, a).

3.7.4 Lead-Based Paint

Air Force Policy (1993) ensures that LBP hazards are avoided or abated during building modifications. The DoD banned the use of LBP in 1978. The base engineer assumes that all structures constructed during or prior to 1985 potentially contain LBP. There has not been an LBP survey conducted for BAFB facilities. LBP abatement is accomplished in accordance with applicable federal, state, and local regulations prior to demolition or renovation activities, in order to prevent any health hazards.

3.7.5 Polychlorinated Biphenyls

The Toxic Substance Control Act (TSCA, 15U.S.C Section 2601, et seq., as implemented by 40 CFR Part 761) regulates polychlorinated biphenyls (PCBs). PCBs are defined as PCB equipment, 500 parts per million (ppm) PCBs; PCB-contaminated, 50 ppm PCBs; and PCB items, 5-49 ppm PCBs. According to the Environmental Office, as of 1996, all transformers were tested and any containing PCBs were removed. As of 1998, the base no longer has any PCB containing electrical transformers. According to files kept by CEV, leaking transformers were found in Building 913, a transfer substation, and Building 901, an electrical vault. A September 1999 visual site inspection uncovered PCB-containing electrical equipment at the crash house, Building 1606. This equipment subsequently has been removed, and a note was made that oil had leaked from the equipment. Part of the floor was removed to remediate the site; however, more testing needs to occur.

Prior to using the DRMO for transformer storage while awaiting test results, storage occurred at the CE Northyard Storage Area and at the site of the planned administration building in the munitions area. No spills were reported at either site.

3.7.6 Pesticides

Pesticides routinely are applied throughout BAFB, with the majority of applications coordinated by the Public Health Officer. Pesticides are stored at the CE Entomology facility in Building 306. BAFB practices integrated pest management (IPM) that seeks to limit pesticide applications by applying treatments when an outbreak has occurred or prior to any training exercise. IPM utilizes four basic pest control methods: mechanical/physical control; habitat control; biological control; and chemical control (COANG, 1999a).

There are several pest problems on base that warrant constant vigilance. Rodents can carry the hantavirus, and this virus is prevalent in Colorado. The hantavirus is spread by contact with rodent feces and urine, and poses an inhalation risk. Mice with the hantavirus are known to occur near the dam at Williams Lake. The base pest manager coordinates prevention efforts with the 140th Public Health Officer. Prevention methods include physical barriers, attention to hygiene practices, and public education. The preferred treatment for curbing the rodent population is the use of mechanical traps and glueboards in buildings; however, occasionally the pesticide bromdiolone is used. Before any building demolition, Bioenvironmental would inspect the building for signs of rodent infestations and clean and treat the infected areas accordingly. Pigeon droppings are the source of the disease psittacosis. A predemolition inspection also would include visually inspecting for signs of pigeon habitation, and the area would be cleaned if warranted (COANG, 1999a).

Another serious health threat at BAFB is the sylvatic plague that is carried by fleas that infect burrowing rodents. BAFB has a large population of black-tailed prairie dogs. Fleas rarely are seen on the surface, and the treatment used to control the flea population is Pyreperm 455 Dust (pyrethrin/permethrin). As a preventative measure, a 100-foot buffer zone is treated around the child development center in Building 725; otherwise, unless there is a specific problem near a building, the base is not treated. Coyotes build antibodies to the bubonic plague; therefore, blood tests are performed on them to determine if there is an outbreak (COANG, 1999a).

Pesticide applications include their use to control roaches in food service areas, and the spraying of herbicides for weed control along base boundaries, aircraft parking aprons, runways, and taxiways. Reportedly, no chlordane ever was used on the base. It has been reported that more than 30 years ago DDT was used at BAFB.

3.7.7 Installation Restoration Program Sites (IRP)

The Air Force established the IRP to identify, characterize, and evaluate past disposal sites and remediate contamination on its installations as needed to control the migration of contaminants and potential hazards to human health and the environment in accordance with CERCLA requirements. There are 10 IRP sites on BAFB. Two sites are closed: fire training area 1 (Site 5) and Facility 801 (Site 6). Seven sites are under a No Further Response Action Planned Decision Document (NFRAP DD). One of these sites, fire training area 2 (Site 1) requires no further remedial action. Three of the sites require further monitoring: the oil pit (Site 2); base landfill (Site 3); and sludge drying beds (Site 7). The state is requiring additional investigations at the Army Aircraft Burial Site (Site 8) before the NFRAP DD is accepted. At Site 9, the UST burial site, a NFRAP DD is to be prepared and submitted to the state. A cleanup was initiated at fire training area 3 (Site 4) in 1998. A remedial investigation/feasibility study is currently being conducted at the former warehouse area (Site 10) (COANG, 2000b).

3.8 HEALTH AND SAFETY

For the purposes of this EA, safety issues focus on factors affecting construction and demolition safety, fire, and public safety.

BAFB has a general safety policy relating to the performance of all activities on the base. Individuals, supervisors, managers, and commanders are expected to give full support to safety efforts. Safety awareness and strict compliance with established safety standards are expected. In the event of any mishaps, incidents are investigated, lessons learned are documented, and corrective actions are taken. In addition, the Buckley Air Force Base's Disaster Preparedness Operations Plan 32-1 establishes procedures to respond to and recover from disasters or accidents, created or natural, affecting assigned and tenant organizations at BAFB, as well as the surrounding area. This plan includes procedures for responding to hazardous material spills and severe weather.

Construction, Demolition, and Maintenance Safety

Contractor personnel for the Proposed Action at BAFB would be responsible for ensuring ground safety and compliance with all applicable occupational health and safety regulations and worker compensation programs. The contractor also would be required to conduct construction and demolition activities in a manner that would not pose risks to workers currently occupying any existing facilities.

Exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets (MSDS) are addressed by industrial hygiene programs. Industrial hygiene is the joint responsibility of bioenvironmental engineering and contractor safety departments, as applicable. They are responsible for reviewing all potentially hazardous workplace operations; monitoring

exposure to workplace chemical (e.g., asbestos, lead, hazardous materials), physical (e.g., noise), and biological (e.g., infectious waste) agents; recommending and evaluating controls (e.g., ventilation, respirators); ensuring personnel are properly protected and not overexposed; and ensuring a medical surveillance program is in place to perform occupational health physicals for those workers subject to chemical exposures.

Fire and Public Safety

Wheatgrass and midgrass prairie vegetation are the dominant vegetation types located on BAFB and generally are susceptible to fire during extended periods of extreme heat and low humidity. Other vegetation types identified at BAFB include bottomland meadow grasses, cottonwood/willow, rubber rabbit brush, weedy forb, and meadow grasses, all primarily found along the East Tollgate Creek and Sand Creek drainages. High fire risk season for this type of vegetation typically extends from June to October.

Currently, fire protection services at BAFB are provided by a 45-person crash and structural fire department; 20 fire suppression personnel are on each shift at any one time. The crew's organization is based on a worst-case fire threat scenario involving large frame aircraft.

Law enforcement at BAFB is provided by a full-time police force. The police provide base perimeter patrols, entry point controls, traffic control, and general police protection.

3.9 LAND USE

Land use at BAFB includes airfield, industrial, commercial, institutional (educational & medical), residential, recreational, and vacant land. The Air National Guard land use classification system is made up of eight different categories. These include:

- Restricted Safety/Environmental Zones
- Airfield Pavements
- Aircraft Maintenance
- Aircraft Operations
- Industrial
- Command and Support
- Special Categories
- Open Space

An additional "Other Operations" category was developed for the existing land use plan. This classification includes the operations of tenant units that are not related to the airfield activities.

The ROI for land use includes those areas potentially affected by the Proposed Action at BAFB (see Figures 2-1 and 2-2). Most land uses at BAFB consist of airfield, open space, industrial, and commercial (i.e. office).

Land use in the general vicinity of BAFB is within the planning area of the city of Aurora. Land uses surrounding BAFB include open space and agriculture to the north and east, residential property to the south and west, and light industry to the northwest.

Noise is an important factor in planning land use on or near military installations. Noise levels and compatible land uses for BAFB are described in the BAFB Air Installation Compatibility Use Zone (AICUZ) study.

3.10 NOISE

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human response to noise can vary according to the type and characteristic of the noise source, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day. Under certain conditions, noise may cause hearing loss, interfere with human activities at home and work, and affect people's health and well being. Community noise levels usually change continuously during the day and exhibit a daily, weekly, and yearly pattern.

The federal noise measure used for assessing total daily noise exposures in communities is the day-night average sound level (DNL) in units of decibels (dB). Most people are exposed to sound levels of 50 to 55 DNL or higher on a daily basis. Research indicates that most of the population is not highly annoyed by outdoor sound levels below 65 dB. Therefore, most agencies have identified 65 DNL as a criterion that protects those most affected by noise and that often can be achieved on a practical basis. Base activities that have the highest potential source for noise impacts are the aircraft/airspace operations. The AICUZ Study (COANG, 1998) plotted the DNL from 65 to 80 dB for a typical busy day at BAFB. The DNL 65 dB contour covers the main runway and extends approximately one mile southeast and one mile northwest over Aurora, Colorado in Arapahoe County. Most of the base is within the 65 dB contour (COANG, 1998a).

3.11 SOCIOECONOMICS

The ROI for socioeconomic activities at BAFB is the Denver Metropolitan area that includes the counties of Adams, Arapahoe, Denver, Douglas, and Jefferson. The criteria used to determine the ROI are the locations of businesses providing goods and services to the installation and its personnel and their dependents.

The baseline socioeconomic environment in which the Proposed Action would take place is considered in this section. The baseline years vary and are based on the most recent data available (e.g., 1997 for regional economic development and 1995 for installation workforce information). The following socioeconomic attributes are discussed: regional economic development (employment and income) and sociological environment (population and housing).

3.11.1 Regional Economic Development

The completion of highway E-470 has stimulated recent growth in the Arapahoe, Douglas, and Adams counties. Among the projects that could crop up along what will be a 46-mile highway are hotels, residential buildings, and more construction at Inverness Office Park (USAF, 2000). In addition, Denver International Airport (DIA), which is located approximately 10 miles northeast of BAFB, stimulated development in the northeast part of the Aurora/Denver metropolitan area when it opened in 1995 (DIA, 1998).

In 1997, most of the jobs in the five-county ROI were in nonagricultural industries. The three primary categories of nonagricultural employment were services, wholesale and retail trade, and government. Together these industries employed nearly 70 percent of the total workforce. The services industry was the largest source of jobs in the ROI, accounting for approximately 30 percent of the total employment. Wholesale and retail trade was the second largest source of employment, with approximately 25 percent of jobs. Government supplied approximately 14 percent of the jobs in the ROI. BAFB is the largest employer in Arapahoe County (USAF, 2000) and the city of Aurora (USAF, 2000), see Table 3.11-1. Unemployment rates in the ROI have been decreasing since 1995, and are lower than the national average, see Table 3.11-2.

Table 3.11-1 Employment for the Region of Influence (ROI)

Employment	1990 ROI Sector Employment (percent of total employment)	1995 ROI Sector Employment (percent of total employment)	1997 ROI Sector Employment (percent of total employment)
Services	221,936 (26.8%)	276,454 (28.6%)	308,276 (29.6%)
Wholesale and Retail	205,453 (24.8%)	243,077 (25.2%)	256,648 (24.7%)
Government	126,206 (15.2%)	138,002 (14.3%)	141,574 (13.6%)
Manufacturing	94,183 (11.3%)	87,033 (9.0%)	92,675 (8.9%)
Finance, Insurance, and Real Estate (F.I.R.E.)	63,560 (7.7 %)	72,104 (7.5%)	80,760 (7.8%)
Transportation and Public Utilities (T.C.P.U.)	67,344 (8.1%)	80,000 (8.3%)	82,947 (8.0%)
Construction	32,551 (3.9%)	53,132 (5.5%)	61,474 (5.9%)
Mining	10,827 (1.3%)	7,552 (0.8%)	6,895 (0.7%)
Other Nonagricultural Private Sector	287 (<1%)	109 (<1%)	58 (<1%)
Total Nonagricultural	822,347 (99.3%)	957,463 (99.2%)	1,031,287 (99.1%)
Total Agricultural	5,693 (0.7%)	8,022 (0.8%)	9,302 (0.9%)
Total	828,040	965,485	1,040,589

Source: Colorado Department of Labor and Employment, Annual County Data, 2000

Table 3.11-2 Unemployment Rates for the Region of Influence (ROI)

County	Percent 1995	Percent 1997	Percent 1999
Adams	4.1	3.1	2.7
Arapahoe	3.2	2.4	2.1
Denver	4.1	3.8	3.1
Douglas	2.7	1.6	1.5
Jefferson	3.2	2.5	2.2
Average ROI	3.5	2.7	2.3
Colorado	4.2	3.2	2.9
United States	5.6	4.9	4.2

Source: Colorado Department of Labor and Employment, Labor Market Information, March 2000b.

In 1995, there were 1,295 active duty military personnel stationed at BAFB along with 2,954 National Guard and Reserve personnel, with a total of approximately 7,000 personnel (USAF, 2000). The number of personnel supported by the base in 2001 was approximately 88,000, see Table 3.11-3. The BAFB gross annual payroll, with approximately 7,000 personnel, was 174.6 million dollars in 1995, see Table 3.11-4. The number of indirect jobs created that are related to BAFB activities was 28,607 in 1995. See Tables 3.11-5 and 3.11-6 for estimates on number and dollar value of indirect jobs and total economic impact.

Table 3.11-3 Personnel Associated with Buckley Air Force Base 2001

Employee Type	Number of People
Active Duty	3626
Civilian	3337
Contractors	1750
Retirees	22,000
Vets/Dependents	55,000
Guard/Reserve (Traditional)	2415
Total Supported by Base	88,128

Sources: 140th Wing Public Affairs (Spann, 2001).

Table 3.11-4 Summary of Gross Annual Payroll, Fiscal Year 1995

Classification	Total Dollars
Appropriated Fund Military	68,910,562
Appropriated Fund Civilian	41,864,595
Non-Appropriated Fund, Civilian, Contract Civilian, and Private Business	63,881, 887
Total Dollars	174,657, 044

Source: Air National Guard, Economic Resource Impact Statement, Fiscal Year 1995.

**Table 3.11-5 Estimate of Number and Dollar Value of Indirect Jobs,
Fiscal Year 1995**

Type of Personnel	Number of Base Jobs	Multiplier	Number of Indirect Jobs
Active Duty Military	1,295	0.50	648
Air National Guard/Trainees/Cadets	2,979	0.21	626
Appropriated Fund Civilians	931	0.63	587
Non-Appropriated Fund Civilians	1,399	0.63	881
Total	6,604		2,742
Average annual jobs for the Local Community			28,607
Estimated Annual Dollar Value of Jobs Created			\$78,440,394

Source: Air National Guard, Economic Resource Impact Statement, Fiscal Year 1995.

Table 3.11-6 Total Annual Economic Impact Estimate, Fiscal Year 1995

Classification	Total Dollars
Annual Payroll	174,657,044
Estimated Annual Dollar Value of Jobs Created	78,440,390
Annual Expenditures	128,376,624
Grand Total	381,474,062

Source: Air National Guard, Economic Resource Impact Statement, Fiscal Year 1995.

3.11.2 Sociological Environment

Population characteristics in the five-county ROI are provided for a baseline year of 1999. The population in the ROI in 1999 was 1,976,065 persons, an increase of approximately 18 percent since 1990. This growth is projected to increase by approximately 33 percent between 1995 and 2020. Jefferson County, with a population of 507,185 persons in 1999, had the highest population of all counties in the ROI (See Table 3.11-7).

Three of the five counties grew by more than 10,000 people last year. Arapahoe County showed the largest population increase over the past year, adding 14,725 persons. Second in population gain was Douglas County, with an increase of 11,300-person (USAF, 2000).

Table 3.11-7 Population Trends in the Region of Influence (ROI)

County	1990 Estimate	1995 Estimate	1999 Estimate	2000 Estimate	2005 Projected	2010 Projected	2015 Projected	2020 Projected
Adams	265,708	299,775	331,321	333,957	377,861	435,796	494,227	547,721
Arapahoe	393,284	446,200	482,328	494,059	523,709	549,906	571,486	591,575
Denver	467,854	500,541	500,421	540,566	555,501	575,805	601,741	633,706
Douglas	61,559	104,623	154,810	172,634	221,774	271,967	318,688	356,716
Jefferson	439,885	491,089	507,185	524,391	547,178	569,366	590,457	611,736
ROI total	1,628,290	1,842,228	1,976,065	2,065,607	2,226,023	2,402,840	2,576,599	2,741,454

Sources: Colorado Department of Labor and Employment, 2000a and CACI Marketing Systems, Sourcebook for County Demographics, 1999a.

BAFB does not have base housing for military personnel and their families (USAF, 2000). However, there are dormitories on base that can house 228 active duty enlisted personnel assigned to the 821st Space Group and the Aerospace Data Facility (USAF, 2000).

The majority of the installation workforce resides within the ROI. The 1990 median value of an owner-occupied housing unit for the ROI ranged from \$71,500 in Adams County to \$119,500 in Douglas County. Median contract rent in the area ranged from \$339 per month in Denver County to \$520 per month in Douglas County (USAF, 2000). In November 1999, the average price of homes in the Denver Metropolitan area was \$215,558, and the rent for two bedroom apartments ranged from \$770 per month in Arapahoe County and \$1,202 per month in Douglas County (USAF, 2000). The average household size in the ROI for 1995 and 1999 was 2.5 (USAF, 2000).

Arapahoe County added the most households during 1998, increasing by 6,725, or an increase of 3.5 percent from the previous year. Douglas County added 3,475 total household units through CY 1998; thereby, maintaining the highest household growth rate throughout much of the early and mid-1990s (USAF, 2000).

3.12 TRANSPORTATION

The ROI for traffic and transportation is the BAFB boundary and the surrounding commuting area. This section analyzes the peak hour traffic on the local roads accessing the base, as well as the average daily traffic on the base roads. The traffic analysis will be used in Section 4.12 as a baseline to compare the increase in

traffic resulting from the Proposed Action. The comparison of the increased traffic to the baseline data will determine the impacts from the Proposed Action.

Information on peak hour traffic and average daily traffic was obtained from *Environmental Assessment for the Construction of a Base Exchange and Commissary Complex Buckley Air National Guard Base, Colorado, December 1999*. Estimated population trends in the five counties (Adams, Arapahoe, Denver, Douglas, and Jefferson) surrounding BAFB indicate a four percent increase in population between 1999 and 2000 (Colorado Department of Labor and Employment, 2000). Because of the slight increase in population, the approximate values for the peak hour traffic and the average daily traffic from the 1999 Environmental Assessment are still applicable to the region.

BAFB is in the Denver metropolitan area, a major crossroads in the Rocky Mountains for vehicular traffic, with I-25, I-70, and I-76 connecting the area to other major cities in the United States. Branching off I-70 to the west of the base, I-225 runs in a north-south direction through the city of Aurora. Intersecting with I-225 in the city of Aurora and running in an east-west direction are two major arteries that serve as primary access to BAFB. The two major arteries are 6th Avenue and Mississippi Avenue that have varying levels of traffic depending on the time of day. Each road leads to one of two gates that serve as main entrances to the base: North Gate and South Gate. See Figure 1-1 for road locations.

North Gate

Traffic Outside Base. The primary artery, 6th Avenue, runs adjacent to the northern boundary of the base and leads to the North Gate, is open 24 hours a day. West of the gate, on 6th Avenue, the number of vehicles during afternoon peak hour traffic is approximately 1,300. East of the North Gate, 6th Avenue turns into Highway 30. On State Highway 30, the number of vehicles during peak hour traffic is 400.

Traffic On Base. At the North Gate, 6th Avenue intersects with Aspen Avenue, the most heavily trafficked road on the base during morning and afternoon rush hour. Traversing the base in a north-south direction, Aspen Avenue has average daily traffic ranging from 3,000 vehicles per day in the central base area to 500 in the less traveled areas of the base.

South Gate

Traffic Outside Base. The second major artery, Mississippi Avenue, provides access to BAFB through South Gate, open during weekday peak commuting hours. West of the South Gate, Mississippi Avenue is a four-lane divided roadway with 700 vehicles on the road during peak hour traffic.

Traffic On Base. At the South Gate, Mississippi Avenue intersects with South Vail Street that connects with Aspen Avenue in the central base area. On South Vail Street, between the intersection with Aspen Avenue and the South Gate, the average daily traffic is 4,000 vehicles per day.

3.13 UTILITIES (INFRASTRUCTURE)

Water supply. BAFB obtains potable water from the City of Aurora. BAFB has a contract with the City of Aurora, where BAFB provides an estimate of its water usage. However, the Proposed Action does not impose any water use limitations on the base (USAF, 2000). Water is distributed to facilities on BAFB for domestic use, process use, and fire protection. BAFB used approximately 0.08 million gallons per day (MGD) of water during FY99.

Wastewater Treatment. BAFB generates both domestic and industrial wastewater. The industrial wastewater consists of water from oil/water separators and does not require pre-treatment (USAF, 2000). BAFB has a wastewater permit that is issued by the Metro Wastewater Regional District (effective 2 August 2000). BAFB reported an average daily flow of 86,845 gallons per day between January 1999 and January 2000. Over that same time period BAFB reported a maximum daily flow of approximately 400,000 gallons per day (USAF, 2000). The Metro Wastewater Region treatment plant was designed to meet the population estimates through 2010, with a hydraulic capacity of 185 MGD. Currently, the plant treats 140-156 MGD (USAF, 2000).

Solid Waste. Solid waste collection and disposal services at BAFB are handled by a private contractor. Waste is collected from dumpsters located throughout the base and routinely transported to the Denver-Arapahoe Disposal Site, in Arapahoe County. The permitted portion of the landfill occupies 2,680 acres with an estimated design life of 40 to 50 years (USAF, 2000).

BAFB generated approximately 20 tons per day of solid waste in 1995. This amount does not include construction and demolition wastes, asbestos, or recycled items. BAFB recycled approximately 1 ton per day of material in 1995 (USAF, 2000).

Electricity. Electricity is provided by the Public Service Company of Colorado (PSC). The PSC East Substation, located at the intersection of Colfax Avenue and I-225, provides electrical power to BAFB through 13.2 kilovolt (kV) overhead distribution lines. BAFB is the largest user of power from this substation. In 1995, the facilities at BAFB used 389,952 kilowatt-hours (kWh) per day of electricity (USAF, 2000).

Natural Gas. The regional natural gas system has a capacity of 130 billion cubic feet. Natural gas is provided to BAFB through a gas main beneath 6th Avenue (USAF, 2000). In 1995, BAFB used 478,400 cubic feet of natural gas per day (USAF, 2000).

3.14 WATER RESOURCES

Water resources include both surface and subsurface waters. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed. Subsurface water, commonly referred to as groundwater, typically is found in certain areas known as aquifers. Aquifers are areas of mostly high porosity soil where water can be stored within soil pore spaces. Groundwater usually is recharged during rain events and is withdrawn for domestic, agricultural, and industrial purposes. The CWA of 1972 is the primary federal law that protects the nation's waters. Its primary objective is to restore and maintain the integrity of the nation's waters.

Water resources analyzed in this section include the watershed and aquifers associated with BAFB. Flood hazards associated with the 100-year floodplain also are addressed in this section.

3.14.1 Surface Water

BAFB generally is divided into two watershed regions. Watershed 1, on the eastern side of the base, contains three drainage areas (1, 2, and 5). Watershed 2, on the western side of the base, contains two drainage areas (3 and 4) (COANG, 1999b). There are a total of 3,272 acres of drainage area at BAFB, of which 411.5 acres (12.6 percent) are impervious surface (COANG, 1999b). The base has extensive natural and man-made surface drainage as well as underground storm drainage lines.

Stormwater runoff from BAFB drains into one of three streams adjacent to the base. East Tollgate Creek receives flows from the western side of the base, Sand Creek and Murphy Creek receive flows from the eastern side of the base. All of these are intermittent streams in the vicinity of the base flow, predominately in the spring and summer. Sand Creek is perennial downstream from the base. The streams are tributaries to the South Platte River that is located approximately 15 miles northwest of the base, and is the primary surface water drainage system in the region. Williams Lake, the largest surface water source on BAFB, is located in the northeast portion of the base and was created by damming a minor tributary to Murphy Creek. It occupies approximately 10 acres, but has a maximum surface area of 30 acres. It is an impoundment for runoff and well water, and is used strictly for fire-fighting or recreational purposes (COANG, 1999b and COANG, 2000e).

Drainage Area 3 is the only area on base that includes industrial facilities where hazardous materials are used and potential runoff contamination could occur. Stormwater for the area discharges to the west. It is regulated under the National Pollutant Discharge Elimination System (NPDES) [Colorado Discharge Permit System (CDPS)] General Permit for Stormwater Discharges Associated with Industrial Activities. BAFB operates under the COR 05A05F issued 2/1/2001 and is valid for five years. The permit authorizes the discharge of storm water associated with industrial activity, and requires monitoring activities (CDPS, 1996).

To control the discharge of floating pollutants resulting from accidental spills, the base maintains oil containment booms systems and absorbents. The base also maintains an Oil and Hazardous Materials Spill Prevention and Response Plan to satisfy 40 CFR 112 (COANG, 1995).

3.14.2 Floodplains

Executive Order (EO) 11988, Floodplains Management, directs government agencies to avoid adverse effects and incompatible development in floodplains. The objective of this presidential order is to avoid, to the extent possible, the long- and short-term adverse impacts associated with occupancy and modification of floodplains. The EO applies to all federal agencies conducting activities and programs that may potentially affect floodplains. To comply with EO 11988, before taking any action, the Air Force must evaluate the impacts of specific proposals on the floodplain. If construction is unavoidable, the agencies must ensure the action conforms to applicable floodplain protection standards and that accepted flood-proofing and other flood protection measures are applied to the construction.

The Federal Emergency Management Agency (FEMA) has designated the East Tollgate Creek drainage as being within the 100-year floodplain. While the area inside the installation is not included on the FEMA map, extrapolation shows that the floodplain would continue through the installation (COANG, 1997).

3.14.3 Groundwater

There are four major bedrock aquifers that underlie BAFB within the Denver Basin. These are the Denver, Upper Arapahoe, Lower Arapahoe, and Larmie-Fox Hills. The aquifers are separated by beds of shale with low permeability and are located in zones of sandstones and siltstones. The Denver Basin is the uppermost aquifer and is approximately 1,000-feet thick. It is classified as a tributary in the area surrounding BAFB because it comes in contact with surrounding surface water systems or with their alluvium. It is approximately 175-feet thick in the area under the base. The Upper and Lower Arapahoe aquifers are 400 to 700-feet thick and underlie the Denver Aquifer. The Laramie-Fox Hills Aquifer is 600 to 800-feet thick

and underlies the Arapahoe aquifers. The Denver and Arapahoe aquifers meet USEPA drinking water standards. The Denver Basin aquifer system is a secondary source of drinking water for suburban Denver and nearby rural communities. The water from the Laramie-Fox Hills Aquifer has been known to contain methane and hydrogen sulfide (COANG, 1999b).

There are alluvial aquifers in the area surrounding BAFB. They are the result of alluvial deposition from erosion and are associated with the East Tollgate Creek and Sand Creek. Groundwater recharges to this aquifer through direct infiltration of precipitation and irrigation water and through groundwater seepage (COANG, 1999b).

There are six nontributary groundwater wells on base. In 1986, the base connected their system with the City of Aurora distribution system. Potable water is supplied to BAFB by the City of Aurora.

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SECTION 4.0

ENVIRONMENTAL CONSEQUENCES

The effects of the Proposed Action and alternatives would have on the affected environment are discussed in this section.

4.1 AIR QUALITY

Impacts to air quality would be considered if pollutant emissions associated with the implementation of the Proposed Action caused or contributed to a violation of any national or state ambient air quality standard, exposed sensitive receptors to substantially increased pollutant concentrations, represented an increase of ten percent or more in affected AQCR's emissions inventory, or exceeded any significance criteria established by the Colorado SIP.

4.1.1 Proposed Action

Fugitive dust from ground-disturbing activities associated with site grading, demolition, and construction, and combustive emissions from vehicles and heavy equipment would be generated during the implementation of the Proposed Action. Fugitive dust emissions would produce elevated particulate concentrations; however, they would be temporary, would fall rapidly from the source, and would not produce long-term impacts. The basewide emissions inventory considers impacts from stationary as well as mobile sources, including on-road and off-road heavy and light duty vehicle movement emissions (off-road use restricted to construction practices). Pollutants from vehicle and heavy equipment exhausts are NO_x, CO, PM₁₀, and VOCs. Internal combustion engine exhausts would be temporary and would not result in any long-term impacts. The 1999 inventory shows the base to be well below the Title V Air Operations Permit limits for all pollutants (COANG, 2000d). As directed by 5 CCR 1001-5, BAFB would obtain an Air Contaminant Emissions Notice by the state of Colorado for all construction activities identified in the Proposed Action.

The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. The USEPA has estimated that uncontrolled fugitive dust emissions from ground-disturbing activities would be emitted at a rate of 80 pounds of total suspended particulates (TSP) per acre per day of disturbance. Fugitive dust emissions from demolition activities would be generated primarily from building dismemberment, debris loading, and debris hauling. The USEPA has established a recommended emission factor of 0.011 lbs of PM₁₀ per square foot of demolished floor space. The total area to be demolished under the Proposed Action is approximately 33,694 sf.

The USEPA assumes that 230 working days are available per year for construction, and that half of these working days would result in uncontrolled fugitive dust emissions. There are approximately 287,260 sf of new construction planned (including paved areas), and it is estimated that the project area would cover approximately 8 acres. There would be slightly elevated short-term PM₁₀ air concentrations. However, as a result of construction and site grading, it would be temporary; would fall rapidly with distance from the source; and would not produce any long-term impacts. The effects of fugitive dust from construction activities would be reduced significantly with an effective watering program. Watering the disturbed area twice per day with approximately 3,500 gallons per acre would reduce TSP emissions by as much as 50 percent. Table 4.1-1 shows the estimated pollutant emissions that may result from the implementation of the Proposed Action. Table 4.1-2 compares emission estimates to the 1998 AQCR 36 Emission Inventory and the USEPA *de minimis* values.

Table 4.1-1 Estimated Pollutant Emissions from Construction Activities					
New Construction or Renovation (N/R)	N				
Building Square Footage	203,527.0	ft ²	No. Stories	1	
Asphalt Area	83,733.0	ft ²	Depth	4	inches
Concrete Area	-	ft ²	Depth	12	inches
Demolition Building Area	33,694.0	ft ²			
Total Area of Site	8.00	Acres (area disturbed by ground breaking)			
Project Duration	12	Months (ground breaking to completion)			
Construction Emissions					
Construction Activity	CO (tons)	VOC (tons)	NO _x (tons)	SO _x (tons)	PM ₁₀ (tons)
Site Preparation/Ground Disturbance	-	-	-	-	8.83
New Building Construction	8.78	1.47	19.99	2.13	1.31
Existing Building Renovation	-	-	-	-	-
Building Demolition	0.06	0.31	0.77	0.08	0.24
Asphalt Paving Operations	0.53	0.03	0.08	0.01	0.02
Concrete Paving Operations	-	-	-	-	-
Total Emissions	9.37	1.81	20.84	2.22	10.40

* The Estimated Pollutant Emissions from Construction Activities were developed by Parsons, Inc.

Table 4.1-2 Proposed Action Air Emissions at BAFB

Pollutant	Proposed Action Annual Emissions (tpy)	1998 AQCR 36 Emission Inventory (tpy)	Net Change (%)	De minimis Values ^a (tpy)	Above/ Below De minimis
CO	9.37	4,761	0.031	100	Below
VOC	1.81	13,727	0.002	100	Below
NO _x	20.84	37,079	0.009	100	Below
SO _x	2.22	34,732	0.001	100	Below
PM ₁₀	10.40	3211	0.15	100	Below
Pb	--		--	25	--

^a Source: 40 CFR 93.153, November 30, 1993.

tpy Tons per year

% Percent

Appropriate air pollution controls would be provided and the acquisition of applicable air permits and/or control plan submittals would be made prior to commencement of construction. Construction and demolition activities would result in the generation of fugitive dust. Proper dust control measures would be applied. If construction activities disturb more than one acre, a fugitive dust control plan would be submitted to the Tri-county Health Department.

4.1.2 Air Conformity Analysis

Federal actions must comply with the USEPA Final General Conformity Rule published in 40 CFR 93, Subpart B (for federal agencies) and 40 CFR 51 Subpart W (for state requirements). The Final Conformity Rule, which took effect on January 31, 1994, requires all federal agencies to ensure that proposed agency activities conform to an approved or promulgated State Implementation Plan (SIP) or Federal Implementation Plan (FIP). Conformity means compliance with a SIP or FIP for the purpose of attaining or maintaining the NAAQS. Specifically, this means ensuring the federal activity does not: 1) cause a new violation of the NAAQS; 2) contribute to an increase in the frequency or severity of violations of existing NAAQS; 3) delay the timely attainment of any NAAQS; or 4) delay interim or other milestones contained in the SIP for achieving attainment.

The Final General Conformity Rule applies only to federal actions in designated non-attainment or maintenance areas, and the rule requires that total direct and indirect emissions of non-attainment criteria pollutants, including ozone precursors, be considered in determining conformity. The rule does not apply to actions that are not considered regionally significant and where the total direct and indirect emissions of non-attainment criteria pollutants do not equal or exceed *de minimis* threshold levels for criteria pollutants established in 40 CFR 93.153(b). A federal action would be considered regionally significant when the total emissions from the proposed action equal or exceed 10 percent of the non-attainment area's emissions inventory for any criteria air pollutant. If a federal action meets *de minimis* requirements and is not considered a regionally significant action, then it

does not have to undergo a full conformity determination. Ongoing activities currently being conducted are exempt from the rule as long as there is no increase in emissions above the *de minimis* levels as the result of the federal action.

For purposes of analysis, it was assumed that the type, square footage, and specific details proposed for the Proposed Action construction are those specified in Section 2.1. It also was assumed that the period of construction was limited to one year. The annual emissions presented in Table 4.1-2 include the estimated annual PM₁₀ emissions associated with implementation of the Proposed Action (demolition and construction) BAFB.

An air conformity analysis was performed using the estimated annual emissions associated with the implementation of the Proposed Action. The estimated values for CO, VOC, NO_x, SO_x, and PM₁₀ were determined to be less than the USEPA *de minimis* values and less than 10% of the AQCR 36 Emission inventory (see Table 4.1-2).

A conformity determination under the CAA conformity rules is not required because 1) the Proposed Action is not regionally significant because the AQCR 36 emissions will increase by less than 10%, and, 2) the Proposed Action estimated emissions are below *de minimis* values as stated in 40 CFR 93.153(b). Since the action's emissions are low, temporary, and insignificant, the Proposed Action would conform to the SIP.

Under the Proposed Action, operations of the proposed facilities would not impact air quality issues. Violations to national or state ambient air quality standards, the exposure of sensitive receptors to substantially increased pollutant concentrations, represented an increase of ten percent or more in affected AQCR's emissions inventory, or exceeded any significance criteria established by the Colorado SIP are not anticipated.

Radon Gas The Air Force Radon Assessment and Mitigation Program would be implemented to determine levels of radon exposure to military personnel and their dependants. Once the structures intended to house personnel are constructed, they will be monitored for radon.

4.1.3 No Action Alternative

Under the No Action Alternative, the demolition and construction would not occur. There would be no impacts as a result of the No Action Alternative and baseline conditions as discussed in Section 3.2 would remain unchanged.

4.2 BIOLOGICAL RESOURCES

This section analyzes the potential for impacts to biological resources from the implementation of the Proposed Action or the No Action Alternative. Analyses of impacts on base focus on whether and how ground-disturbing activities may affect biological resources.

4.2.1 Proposed Action

The Proposed Action is not likely to have any adverse effects on biological resources as described in Section 3.3, with the exception of the black-tailed prairie dogs and their commensal species (i.e. burrowing owl) present at the proposed site locations (VQ/TLF Facility and Fitness Center). The BAFB Prairie Dog Management Plan and all applicable local, state, and federal laws will be followed (including CDOW recommendations for prairie dogs and owls) for all prairie dog issues. To avoid impacts to the burrowing owl, the CDOW recommends no human disturbance within 1/16-mile of known burrows between April 1 and July 31. CDOW also recommends monitoring black-tailed prairie dog colonies for the presence of burrowing owls, if intrusive activities or black-tailed prairie dog controls are planned, between March 1 and October 31.

Many studies have addressed noise and disturbance to various species of birds, including several federally threatened or endangered species. The affect of noise on animals is variable, not only between different species, but also between individuals (COANG, 1999b). In general, field studies on a variety of animals have demonstrated few, if any, measurable lasting physiological or reproductive effects from impulse or steady state noise, particularly at levels below 120 dBA (COANG, 1999b). Noise-related impacts to wildlife during the demolition and construction activities would be minor, short-term impacts. Under the Proposed Action, no long-term noise impacts to wildlife are anticipated.

4.2.2 No Action Alternative

Under the No Action Alternative, BAFB would continue to utilize Buildings 1000, 1006, and 1007. The proposed Fitness Center, Wing HQ, VQ/TLF, and CE Warehouse would not be constructed, and the demolition to Buildings 25, 1011, 1211, 1620, and 1631 would not occur; therefore, no impacts would occur as a result of the No Action Alternative.

4.3 CULTURAL RESOURCES

This section analyzes the potential for impacts to cultural resources from the implementation of the Proposed Action or No Action Alternative. Analyses of on-base impacts focus on whether and how ground-disturbing activities may affect cultural resources.

4.3.1 Proposed Action

Ground disturbing activities under the Proposed Action include the construction of the proposed Fitness Center, Wing HQ, VQ/TLF, CE Warehouse, and the expansion of Buildings 1000, 1006, and 1007. Also included in the Proposed Action is the demolition of Buildings 25, 1011, 1620, 1631, and 1632. No buildings identified in the Proposed Action are listed as eligible or potentially eligible to the NRHP. Building 25 has been determined not eligible for listing (see Appendix D). Four facilities, Buildings 1000, 1620, 1006, and 1007 have not been evaluated per section 110 of the Historic Preservation Action. If these buildings were determined not eligible for listing in the NRHP, no impacts would occur. These buildings are being inventoried and evaluated at this time; however, if any of these buildings were determined to be eligible for listing, coordination between BAFB and the SHPO would occur prior to any demolition or construction activity. No impacts to Cultural Resources are expected during the operation of the proposed facilities.

4.3.2 No Action Alternative

Under the No Action Alternative, all proposed demolition and construction activities would not occur. Therefore, no impacts to cultural resources would occur.

4.4 ENVIRONMENTAL JUSTICE

4.4.1 Proposed Action

Environmental justice was considered in accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, as applied to the Air Force by authority set forth in DoD Instruction 4715.9. The median household income exceeded the \$13,423 threshold in all zip code areas. There is not a disproportionately high low-income population within the ROI.

Of the ten surrounding zip-code areas, one zip code (80239) has a disproportionately high minority population. The Proposed Action at BAFB would not have an adverse impact to the surrounding community. As a result, it was determined that the Proposed Action would not have an overall disproportionately adverse environmental or human health effect on the minority population. This conclusion is based on the premise that the ROI would be the zip code delineated areas immediately surrounding BAFB.

4.4.2 No Action Alternative

Implementation of the No Action Alternative would cease the demolition, construction, and repair projects planned as part of the Proposed Action. There are no high minority populations or disproportionately high low-income populations in

the immediate vicinity of BAFB. Consequently, no impacts to either of these populations would occur.

4.5 GEOLOGY, SOILS AND TOPOGRAPHY

4.5.1 Proposed Action

The sites for the demolition and construction (including expansion) for Buildings 25, 1000, 1006, 1007, 1011, 1620, 1631, and 1632 are on previously disturbed soils. The soils at the Proposed Action sites (with the exception of Building 1011 consist of a Fondis-Weld Association soil group (COANG, 1999b). The soil is well-drained, with a high water holding capacity. It has moderately slow permeability and is somewhat susceptible to wind and water erosion. The soils in the area of the Building 1011 consist of Ranohill-Buick Litle. The soil in this area is composed of moderately deep, well-drained, loamy to clayey soils.

Soils exposed during demolition and construction would be subject to erosion. Impacts to soils would occur during site grading and trenching. With the use of best management practices, such as applying water during dry periods or covering the soils during heavy rain events and using barriers to restrict erosion of exposed soils, the minimization of erosion/sedimentation and runoff would occur. There are no prime farmlands in the Proposed Action site locations. There would be neither long-term nor major short-term impacts to geology from the Proposed Action.

4.5.2 No Action Alternative

Under the No Action Alternative, the construction and demolition associated with the Proposed Action would not occur. There would be no impacts to geology, soils, or topography as discussed in Section 3.6.

4.6 HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT

The following section evaluates the impacts to hazardous waste management and hazardous materials with respect to the Proposed Action and No Action Alternative.

4.6.1 Proposed Action

4.6.1.1 Hazardous Waste

There are four hazardous waste Satellite Accumulation Points (SAPs) at Building 1007. The hazardous waste stream inventory for building 1007 contains transformer oil, NiCad batteries, creosote poles, PVC primer rags, antifreeze, gasoline, oil/water separator sludge, and full or partially full aerosol spray paint cans.

Waste generated during demolition activities has the potential to contain hazardous substances. Some of the buildings were constructed before 1985, and must be tested for LBP prior to demolition. If tests prove that LBP is an issue, the hazards associated with it would be abated in accordance with applicable federal, state, and local regulations prior to the demolition of the buildings. If proper abatement

procedures were followed, there would be no impacts from LBP with respect to the Proposed Action.

Under the Proposed Action, the SAP sites may have to be temporary relocated; therefore, there may be a short-term impact to hazardous wastes as a result of the Proposed Action.

4.6.1.2 Hazardous Materials

There are no ASTs associated with the Proposed Action. Building 1011 contains flammable storage lockers that contain paint, lube oil, propane, rust inhibitor and thinner. Flammable storage lockers at Buildings 1000, 1006, and 1007 store paint, thinners, POL, grease, propane, and paint.

Under the Proposed Action, no impacts to hazardous materials would occur.

4.6.1.3 Asbestos

The Air Force conducted an asbestos survey that included Buildings 25, 1007, 1011, 1620, 1631, and 1632. Buildings 1007, and 1620 were determined to be ACM-free. Buildings 25, 1011, and 1631 tested positive for ACM (COANG, a). In addition, ACM has been identified in the ground (soil) and would be remediated prior to construction. All suspect material would require special handling and disposal in accordance with federal, state, and local regulations. The concerns regarding the potential release of asbestos fibers would be eliminated with the use of new building materials during construction. Following proper abatement procedures during demolition and disposal, there would be no impacts regarding ACM from implementation of the Proposed Action.

4.6.1.4 Lead-based Paint

Waste generated during demolition of the Buildings 25, 1011, and 1620 have the potential to contain hazardous substances (LBP). All buildings are known to have been constructed before 1985 must be tested for LBP prior to demolition. If tests prove that LBP is an issue, the hazards associated with it would be handled in accordance with applicable federal, state, and local regulations prior to demolition. If proper abatement or disposal procedures were followed, there would be no impacts from LBP with respect to the Proposed Action. Building and 1631 were constructed in 1990 and would not contain LBP hazards.

4.6.1.5 PCBs

There are no longer any PCB containing transformers on the Base. There were no spills reported at any of the construction or demolition sites associated with the Proposed Action (COANG, b). There would be no impacts from PCBs at any of the Proposed Action sites.

4.6.1.6 Pesticides

The buildings planned for demolition would be inspected for signs of rodent infestation and cleaned and treated, if necessary, to eliminate the threat of spreading the hantavirus. The outside of the buildings would be inspected for pigeon droppings and cleaned, if necessary, to prevent the spread of psittacosis. Areas of construction would be inspected prior to ground disturbing activities for evidence of prairie dog burrows and treated as a precaution as necessary. No impacts from pesticides associated with the Proposed Action are anticipated.

4.6.1.7 IRP Sites

There are no IRP sites associated with buildings or sites associated with the Proposed Action. There would be no significant impacts from hazardous wastes or substances associated with the Proposed Action.

Under the Proposed Action, no impacts from hazardous substances are expected during the operation of the proposed facilities.

4.6.2 No Action Alternative

If the No Action Alternative is selected, there would be no construction or demolition performed. There would be impacts associated with ACM from Buildings 25, 1011, and 1631. All of the ACM was found to be in good repair and does not pose a threat. However, regular inspections and maintenance should be conducted to ensure that the ACM remains intact. There are no other impacts from hazardous materials or wastes associated with the No Action Alternative.

4.7 HEALTH AND SAFETY

4.7.1 Proposed Action

Implementation of the Proposed Action would not be expected to result in either an increase in accidents or a downgrading of the current safety environment at the proposed locations.

Construction and Demolition Safety: No adverse impacts to construction or demolition safety would occur under implementation of the Proposed Action.

Although the Proposed Action would require both construction and demolition activities, occupational health and safety regulations would be enforced, and activities would be conducted in a manner that would not pose risks to workers occupying existing facilities. Any potential exposure to hazardous materials and required use of personal protective equipment would be monitored in accordance with existing industrial hygiene programs.

Fire and Public Safety: No adverse impacts to fire or public safety would occur under implementation of the Proposed Action. New facilities development, replacement facilities, and structural demolitions are proposed for areas currently monitored for fire suppression and prevention and for law enforcement. No new developments that would increase safety risks to the public are proposed.

Under the Proposed Action, no impacts to health and safety would occur during the operation of the proposed facilities. The removal of the facilities in the Clear Zone would alleviate health and safety concerns associated their current operation.

4.7.2 No Action Alternatives

With the selection of the No Action Alternative the safety environment would be negatively impacted. The centralized wing to support the beddown of the new ABW, the properly configured CE Warehouse, and the expansion of the shop facilities may help to provide more efficient use as opposed to the current configuration. The unused structures, if left in place, may pose an increased fire hazard as their maintenance may not be adequate to assure their safety in the future. Finally, Buildings 1620, 1631, and 1632 would have an adverse impact on aircraft safety.

4.8 LAND USE

Currently, land use at the Proposed Action sites include Open Land (proposed Fitness Center, Wing HQ, VQ/TLF, and CE Warehouse) and Command and Support (Buildings 25, 1000, 1011, 1006, 1007, 1620, 1631, and 1632).

4.8.1 Proposed Action

Under the Proposed Action, the proposed Fitness Center, Wing HQ, VQ/TLF, and CE Warehouse would convert small parcels of land from open land to industrial/commercial. The conversion of land use would be consistent with surrounding land use and would not result in any significant long-term impact. All remaining Proposed Action site locations would not change their existing land use designations; therefore, no impacts would occur.

4.8.2 No Action Alternative

Under the No Action Alternative, no changes in land use classification would occur; therefore, no impacts to land use would occur.

4.9 NOISE

The primary human response to environmental noise is annoyance. The degree of annoyance has been found to correlate well with the DNL.

4.9.1 Proposed Action

Noise impacts from the Proposed Action are a function of demolition activities, site grading, and construction. The highest calculated cumulative energy equivalent sound levels from construction activities are estimated to be 85 dB at 50 feet from the center of the project site. This would occur during the grading phase. Noise levels at 50 feet for some equipment used during demolition are: 80 dB for bulldozers; 83 dB for cranes; 85 dB for backhoes; and 91 dB for trucks. The impacts from noise would vary according to the activity occurring on any given day and impacts would cease when demolition is completed. The 1998 AICUZ shows that approximately 95 percent of the base is within the 65 dB runway noise contour. Buildings 1011, the proposed Fitness Center, VQ/TLF, and Wing HQ are within the 65 dB contour. Buildings 1006, 1007, 1620, 1631, 1632, and the proposed CE Warehouse are within the 65 to 70 dB noise contour. Building 25 is outside the 65 dB noise contours associated with current aircraft operations on BAFB. There are no nearby off-base adjacent receptors to experience noise impacts from demolition and construction activities. Noise impacts would be short-term and would discontinue after demolition, site grading, and construction are complete. The effects of noise would not be significant and are consistent with acceptable noise levels on an active Air Force Base.

4.9.2 No Action Alternative

Under the No Action Alternative, demolition, site grading, and construction associated with the construction and demolition would not occur. There would be no impacts associated with noise.

4.10 SOCIOECONOMICS

4.10.1 Proposed Action

Construction, demolition, and repair activities associated with the Proposed Action would provide short-term economic benefits to the local economy. Beneficial impacts from short-term construction payrolls and materials purchased, as well as long-term economic benefits realized with the relocation of base personnel to

BAFB, would not result in appreciable beneficial impacts to the economy on a regional scale. The addition of employees associated with the Proposed Action represents only a minimal fraction of the total workforce in the Denver Primary Metropolitan Statistical Area.

4.10.2 No Action Alternative

Under the No Action Alternative, there would be no change in socioeconomics from the existing conditions, as described in Section 3.12.

4.11 TRANSPORTATION

4.11.1 Proposed Action

The construction, demolition, and repair projects proposed for the base would have minor, temporary impacts on traffic due to increased traffic by construction vehicles and possible temporary road closures.

Continued use of the upgraded shop facilities, and the additional housing facilities would result in a minimal overall impact to transportation and circulation. Any impact to vehicular traffic would be negligible relative to total on-base traffic levels and trends.

4.11.2 No Action Alternative

Under the No Action Alternative, existing transportation conditions and circulation patterns would remain at present levels and patterns both on and off base.

4.12 UTILITIES (INFRASTRUCTURE)

4.12.1 Proposed Action

Water supply: No significant impacts to the water supply are expected since the city of Aurora has enough water for 80,000 additional residents (City of Aurora, 2000) and BAFB is not restricted to the amount of water it can use.

Wastewater Treatment: There would be a minor temporary increase in wastewater during construction, demolition, and repair activities due to an increase in the number of temporary personnel necessary to carry out those tasks. However, this increase is expected to be less than one percent over existing conditions. Additionally there would be an increase in wastewater during operation of the proposed facilities; however, this would not be a significant increase in wastewater generation.

Solid Waste: Solid, nonhazardous waste generation and construction debris (e.g., plastics, paper, and concrete) would increase as a result of construction, demolition, and repair events but would represent short-term impacts. Wastes would be collected in dumpsters and routinely by a private contractor transported to and disposed of at the Denver-Arapahoe Disposal Site located in Arapahoe County adjacent to the base. An increase in solid waste would occur from the operation of the proposed facilities; however, these increases would not be significant when compared to the typical amount of solid waste generated from BAFB.

Electricity: There would be a temporary increase in electrical use during the implementation and operation of the Proposed Action. However, there would not be a significant impact to the capacity of the base.

Natural Gas: It is not expected that there would be an increase in the use of natural gas during the implementation of the Proposed Action.

4.12.2 No Action Alternative

Under the No Action Alternative, no impacts to utilities are anticipated.

4.13 WATER RESOURCES

4.13.1 Proposed Action

Floodplains occur in the southwestern corner of the base and are not associated with the Proposed Action site locations; therefore, no impacts to floodplains would occur on BAFB.

Groundwater would not be adversely affected under the Proposed Action. Excavation and ground disturbances are planned at the Proposed Action site locations; however, ground disturbances would not reach the depths that would affect groundwater resources. There would be no ground disturbing activities to sufficient depths to impact groundwater associated with the remaining proposed activities. There would be no impacts to groundwater under the Proposed Action.

Implementation of the Proposed Action potentially would result in a temporary increase in runoff and in total suspended particulates (tsp) in nearby surface waters as a result of site grading that would occur associated with the Proposed Action. There would be temporary, minor adverse impacts to surface water associated with the Proposed Action. However, impacts can be reduced by implementing best management practices such as the use of siltation barriers at construction and grading sites and revegetating all exposed soils.

4.13.2 No Action Alternative

Under the No Action Alternative, construction (including expansion) and demolition would not occur. Therefore, no impacts to water resources would occur.

4.14 INDIRECT AND CUMULATIVE IMPACTS

There are five other construction projects being considered at BAFB during the same period as the proposed projects. Other activities include military and civilian training events, the installation of an asphalt jogging path, renovating and constructing new Munitions Complex facilities, paving the security forces impound lot, the demolition of the Boresight Antennae and Buildings 440 & 441, and construction and demolition activities associated with the proposed POL Complex, Air Traffic Control Tower, and Fire House. One project includes constructing a new dormitory; and finally, another project includes constructing an 115,000 square foot BX and shopping mall and a new 70,000 square foot Commissary.

Construction of the BX and Commissary Complex began in FY00; however, completion of the new facilities has been delayed due to asbestos abatement and issues with burrowing owls at the site (821ST SPTS/CEV, 2001). The dormitory construction project in FY01. Potentially, the construction phase of the Proposed Action would coincide with the construction phase of these facilities. Therefore, emissions anticipated from this overlap are presented in Table 4.14-1.

Table 4.14-1 Proposed Cumulative Emission within AQCR 36

Cumulative Emissions ^b					
Construction Activity	CO (tons)	VOC (tons)	NO _x (tons)	SO _x (tons)	PM ₁₀ (tons)
Emissions from Proposed Action	9.37	1.81	20.84	2.22	10.40
Emissions from POL, Air Traffic Control Tower, and Fire House facilities	1.49	0.34	3.41	0.36	4.71
Emissions from Munitions Complex ^c	1.22	300.51	3.27	.35	9.24
Emissions from BAFB training activities, Installation of jogging path, security forces impound lot, and demolition of Boresight Antennae and Buildings 440 & 441.	0.96	0.06	0.17	0.02	3.91
Emissions from SBIRS Antennae	0.52	0.07	0.80	0.09	4.11
Emissions Associated With the BX and Commissary Complex Construction	9.4	2.9	43.2	0.0	46.2
Emissions Associated With the Civil Engineering Complex	0.30	0.05	0.68	0.07	1.70
Total	22.74	305.67	71.57	3.02	76.16
1999 AQCR 36 Emission Inventory^a	4,761	13,727	34,732	37,079	3211
Percent Increase (%)	0.48	2.23	0.21	0.008	2.37

a COANG, 1999

b Estimated emissions based on building square footage, site areas, and project duration

c Air emissions include an estimated 300-lbs. VOC emission per year for the proposed paint booth operation

While site clearing, preparation, and new building construction activities were considered in estimating air emissions associated with the two building additions proposed for the CE complex, only site clearing/preparation activities were considered in estimating potential air emissions from installation of the prefabricated building. Estimated air emissions associated with the construction phase of the BX and Commissary complex were taken from the Air National Guard December 1998 Environmental Assessment (COANG, 1998).

Analysis of the data presented in Table 4.14-1 indicates that the overall ambient air quality within AQCR 36 would be slightly affected by construction and operation of the Proposed Action. Increased emissions from construction activities would produce slightly elevated air pollutant concentrations; however, the increases do not exceed a 10 percent increase over 1999 AQCR 36 inventory baseline conditions.

With the exception of biological resources, there are no direct, indirect, or cumulative impacts associated with the Proposed Action. Under the Proposed Action, in addition to on-going and planned construction projects, there would be no cumulative air impacts. The estimated values for CO, VOC, NO_x, SO_x, and PM₁₀ would be below the USEPA *de minimis* threshold levels and below the 10% criteria for the AQCR 36 Emission Inventory, (see Section 4.1). The cumulative impacts for

the Proposed Action would be negligible. While there are other projects ongoing/planned throughout BAFB, the *de minimis* environmental effects from this project, coupled with other ongoing/planned projects, will not create any cumulatively significant impacts on the environment.

Biological resource effects associated with the Proposed Action likely would be related to black-tailed prairie dogs. The *Supplement to Environmental Assessment of Proposed Prairie Dog Management Practices, June 2001* would establish procedures and protocols to address potential effects. Vegetation at the site is limited to an invasive noxious weed, and its removal would have no cumulative adverse effect. Donation of black-tailed prairie dogs to the black-footed ferret captive-breeding program would have a cumulative beneficial effect in the form of support for the recovery of an endangered species.

4.15 UNAVOIDABLE ADVERSE IMPACTS

There are no significant unavoidable adverse impacts associated with the Proposed Action at BAFB.

4.16 RELATIONSHIP BETWEEN SHORT-TERM USES AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Implementation of the Proposed Action would have a positive effect on long-term productivity by providing temporary and short-term housing that meets USAF guidelines, by removing unnecessary structures, expanding facilities to meet current demand, and creating new Fitness Center, Wing HQ, and CE Warehouse facilities.

4.17 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analyses include identification of "...any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented." Demolition and construction of on-base facilities would require the consumption of limited amounts of materials typically associated with demolition, construction, and renovation (i.e., concrete, and sand). An undetermined amount of energy to conduct demolition, construction, and operation of these facilities would be expended and irreversibly lost. Both the Proposed Action and the No Action Alternative would require fuels used by various civilian and military vehicles. Implementation of the Proposed Action would result in minor impacts to environmental resources including some prairie grass habitat being converted into a paved asphalt path and the removal/relocation of black-tailed prairie dogs would result in an irretrievable and/or irreversible impact. All black-tailed prairie dog issues and their associated commensal species would be

addressed in the *Final Supplement to Environmental Assessment of Proposed Prairie Dog Practices, June 2001*. No additional wildlife habitat or cultural resources at BAFB would be lost or adversely affected as a result of implementation of the Proposed Action.

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SECTION 5.0

LIST OF PREPARERS

Parsons ES Employees	Degree	Professional Discipline	Years of Experience
Jeff Duffy	Ph.D. Environmental Health Science	Risk Assessment - Toxicologist	12
Brian Lane	B.S., Biology	Biology	9
John C. Martin	M.S., City and Regional Planning	Civil/Environmental Engineer	25

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SECTION 6.0

PERSONS CONTACTED

Gene	Backhaus	Natural Resources Conservation Service Denver CO 303-236-2886 X27
Chris	Barnes	140 th SPTG/CECC 303-677-9996
John	Cottrill	821 st SPTS/ CEE 303-677-5527
Lee	Carlson	USFWS Colorado Regional Office Denver, CO 20590 303-275-2370
Dan	Felzien	140 th SPTG/CEV 303-677-6276
Roxanne	Kean	821 st SPTS/CEPR 303-677-9905
SGT	Laws	821 st MDS/SGPB 303-677-6351
Bob	Leachman	USFWS Colorado Regional Office Grand Junction, CO 970-243-2778 X18
Lisa	Magana	140 th SPTG/CEV 303-677-6158

PERSONS CONTACTED - continued

Heather	Pierson	Senior Planner City of Aurora Planning Department 303-739-7555 www.ci.aurora.co.us
John	Sass	303-677-9995
Kelly	Shryock	821 st SPTS/CEME 660 S Aspen St. Stop 80 Buckley AFB, CO 80011
Tom	Slattery	821 st SPTS/CEC 303-677-9902
John	Span	821 st SG/PA 303-677-9431
Lt. Col. Thomas	Stanley	140 th SPTG/CE 303-677-9903
Dee	Watt-Hazen	140 th SPTG/CEV 303-677-9100
1LT Joe	Zambo	COARNG Facilities and Engineering 303-677-8921

DISTRIBUTION LIST**DRAFT EA**

Denise	Balkas	City of Aurora 1470 South Havana Aurora, CO 80012
Lee	Carlson	USFWS 755 Parfet Street, Suite 361 Lakewood, CO 80215
Cynthia	Cody	USEPA, Region 8 999 18 th Street, Suite 500 Denver, CO 80202
Georgianna	Contiguglia	Colorado History Museum 1300 Broadway Denver, CO 80203-2137
Mark	Kadnuck	Colorado Department of Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246-1530
Eliza	Moore	Colorado Division of Wildlife 6060 south Broadway Denver, CO 80216
Capt. Chris	Stoppel	AFCEE/ECA 3207 North Road Brooks AFB, TX 78235-5363

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SECTION 7.0

REFERENCES

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-
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SECTION 8.0

ACRONYM LIST

°F	Degrees Fahrenheit
μ	Microns
μg/m ³	Micrograms per cubic meter
140 th CES	140 th Civil Engineering Squadron
140 th WG	140 th Wing
AAFES	Army and Air Force Exchange Services
ACM	Asbestos containing material
ADF	Aerospace Data Facility
AFB	Air Force Base
AFFF	Aqueous Fire fighting Foam
AFI	Air Force Instruction
AGE	Aerospace Ground Equipment
AGL	Above Ground Level
AICUZ	Air Installation Compatibility Use Zone
ANG	Air National Guard
ANGB	Air National Guard Base
APE	Area of Potential Effect
APEN	Air Pollution Emission Notice
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
AST	Aboveground storage tank
ATC	Air Traffic Control
BAFB	Buckley Air Force Base
BASH	Bird/Aircraft Strike Hazard
BEE	Bioenvironmental Engineering Technician
BMPs	Best management practices
Btu	British thermal unit
BX	Base Exchange
CAA	Clean Air Act
CAP	Central Accumulation Point
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and the Environment
CDPS	Colorado Discharge Permit System
CE	Civil Engineering
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act

ACRONYM LIST

CFR	Code of Federal Regulations
CINC	Commander in Chief
CNHP	Colorado National Heritage Program
CO	Carbon monoxide
COANG	Colorado Air National Guard
CRI	Cultural resources Inventory
CWA	Clean Water Act
CY	Calendar year
CZ	Clear Zone
dB	Decibel
DNL	Decibel, night level
DoD	Department of Defense
DoT	Department of Transportation
DRMO	Defense Reutilization and Marketing
DSP	Defense Support Program
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EM	Environmental Manager
EMIS	Environmental Management Information System
EMO	Environmental Management Office
EO	Executive Order
EPCRA	Emergency Planning and Community Right To Know Act
FAA	Federal Aviation Authority
FAR	Federal Aviation Regulations
FEMA	Federal Emergency Management Agency
FIP	Federal Implementation Plan
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GIS	Geographic Information System
gpm	Gallons per Minute
HAP	High Accident Potential
HAPs	Hazardous Air Pollutants
HM	Hazardous material
HQ	Headquarters
HW	Hazardous waste
IAP	Initial Accumulation Point
INRMP	Integrated Natural Resource Management Plan
IPM	Integrated Pest Management

ACRONYM LIST

IRP	Installation Restoration Program
kHz	KiloHertz
kV	Kilovolt amperes
kVh	Kilowatt-hours
kW	Kilowatt
kWCm ²	Kilowatts per square centimeter
L _{AE}	Sound Exposure Level
LBP	Lead-based paint
Lbs	Pounds
MBTA	Migratory bird Treaty Act of 1912
MBtu	Million British thermal units
MCS	Mission Control Station
mg	Milligrams
mgd	Millions of gallons per day
MIL-HDBK	Military Handbook
MOA	Memorandum of Agreement
MSA	Munitions Storage Area
MSDS	Material Safety Data Sheets
MSL	Mean sea level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFRAPDD	No Further Response Action Planned Decision Document
NHPA	National Historic Preservation Act
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
NPDES	National Pollution Elimination Discharge Permit
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O ₃	Ozone
OSHA	Occupational Safety and Health Act
Pb	Lead
PCB	Polychlorinated biphenyl
pCi/L	Picocuries per Liter
PEL	Permissible exposure levels
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to 10 microns
PM _{2.5}	Particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

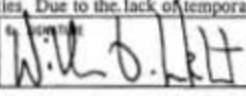
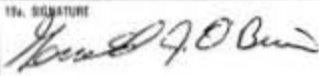
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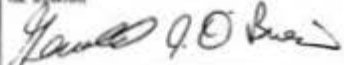
POL	Petroleum, Oil, and Lubricants
ppm	Parts per million
PSC	Public Service Company of Colorado
PSI	Pounds per Square Inch
QD	Quantity Distance
RAQC	Regional Air Quality Council
RCRA	Resource Conservation and Recovery Act
RF	Radio frequency
ROI	Region of Influence
SCS	Soil Conservation Service
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	Sulfur dioxide
SO _x	Sulfur oxides
SPCC	Spill Prevention, Control and Countermeasures
SWS	Space Wing Squadron
TCA	Trichloroethane
tpy	Tons per year
TSCA	Toxic Substance Control Act
TSP	Total Suspended Particulates
U.S.	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USANG	United States Army National Guard
USC	United States Code
USDA	United State Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground storage tank
VFR	Visual Flight Rules
VOC	Volatile organic compound

APPENDIX A

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PRELIMINARY ENVIRONMENTAL IMPACT ANALYSIS		Report Control Symbol RCS:
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate form numbers.		
SECTION I - PROPOSER INFORMATION		
1. TO (Environmental Planning Function) AGINS/CEV Buckley ANGB, CO	2. FROM (Proponent organization and functional address symbol) 821 SPTS/CE	3a. TELEPHONE NO. (303) 677-5519
3. TITLE OF PROPOSED ACTION Visitors Quarters, CRWU 03-3003		
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need for it) The purpose of this action is to construct an approximately 50,000 SF Visitors Quarters facility to house officers and airmen visiting the base due to the stand up of the new Air Base Wing at Buckley on 1 Oct 01.		
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.) This project will construct a 50,000 SF two story visitors quarters complex complete with parking lots, exterior lighting, landscaping, and connections to all of the usual utilities. Due to the lack of temporary housing on base, this is the only option.		
6. PROPOSER APPROVAL (Name and Grade) William J. Lockhart, GS-13	SIGNATURE 	7b. DATE 17 FEB 00
SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. Check appropriate box and describe potential environmental effects including cumulative effects. (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)		
7. AIR INSTALLATION COMPATIBLE USE ZONES/LAND USE (Noise, accident potential, encroachment, etc.)	+	0
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.)	+	0
9. WATER RESOURCES (Quality, quantity, source, etc.)	+	0
10. SAFETY AND OCCUPATIONAL HEALTH (Microbiological/chemical exposure, explosion safety quantity distance, etc.)	+	0
11. HAZARDOUS MATERIAL/SLUDGE (Disposal/generation, solid waste, etc.)	+	0
12. BIOLOGICAL RESOURCES (Wetlands/Endangered, flora, fauna, etc.)	+	0
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)	+	0
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)	+	0
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)	+	0
16. OTHER (Potential impacts not addressed above.)	+	0
SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION		
17. <input checked="" type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____, OR <input type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.		
18. REMARKS 		
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) Gerald J. O'Brien, GS-12	19a. SIGNATURE 	19b. DATE 2 MAR 00

PRELIMINARY ENVIRONMENTAL IMPACT ANALYSIS		Report Control Symbol RCS:
<small>INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item numbers.</small>		
SECTION I - PROponent INFORMATION		
1. TO: Environmental Planning Function AGINS/CEV Buckley ANGB, CO	2. FROM: Proponent organization and functional address symbol 821 SPTS/CE	2a. TELEPHONE NO. (303) 677-5519
3. TITLE OF PROPOSED ACTION Wing HQ/Admin Facility, Project No. CRWU 03-3002		
4. PURPOSE AND NEED FOR ACTION <i>Identify decision to be made and need detail</i> The purpose of this action is to construct an approximately 50,000 SF administration facility to house the new Air Base Wing which will be standing up at Buckley on 1 Oct 01. This building will contain all of the functions normally associated with a Wing.		
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DPMAS) <i>Provide sufficient detail for evaluation of the total action.</i> This project will construct a 50,000 SF two story building complete with parking lots, exterior lighting, landscaping, and connections to all of the usual utilities. Due to the lack of sufficient office space on base, this is the only option available.		
6. PROponent APPROVAL <i>(Name and Grade)</i> William I. Lockhart, GS-13	6a. SIGNATURE 	6b. DATE 17 FEB 00
SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. <i>(Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)</i>		
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE <i>(Noise, accident potential, aircraft noise, etc.)</i>	X	0
8. AIR QUALITY <i>(Emissions, attainment status, state implementation plan, etc.)</i>	X	0
9. WATER RESOURCES <i>(Quality, quantity, source, etc.)</i>	X	0
10. SAFETY AND OCCUPATIONAL HEALTH <i>(Hazardous materials, chemical exposure, explosives safety, quality, etc.)</i>	0	X
11. HAZARDOUS MATERIALS/WASTE <i>(Radioactive, explosive, solid waste, etc.)</i>	X	0
12. BIOLOGICAL RESOURCES <i>(Wildlife, riparian, flora, fauna, etc.)</i>	X	0
13. CULTURAL RESOURCES <i>(Native American burial sites, archaeological, historical, etc.)</i>	X	0
14. GEOLOGY AND SOILS <i>(Topography, minerals, geothermal, Irradiation Restoration Program, seismicity, etc.)</i>	X	0
15. SOCIOECONOMIC <i>(Employment/population projections, school and local fiscal impacts, etc.)</i>	0	X
16. OTHER <i>(Potential impacts not addressed above)</i>	0	X
SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION		
17. <input type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____, OR <input checked="" type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.		
18. REMARKS 		
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION <i>(Name and Grade)</i> Gerald J. O'Brien, GS-12	19a. SIGNATURE 	19b. DATE 2 Mar 00

20013660

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS		Report Control Symbol RCS: 01-001
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate form numbers.		
SECTION I - PROPONENT INFORMATION		
1. TO (Environmental Planning Function) BAI ST SPTS/CEV MS 226 ATTN: EHS	2. FROM (Proponent organization and functional address symbol) COARNG FMO	2a. TELEPHONE NO. 303-677-8921
3. TITLE OF PROPOSED ACTION PN: 080116A, READY BLDG ADD/ALT (WMD) B1000		
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date) Provide the Civil Support Team administrative, storage, locker room, break, classroom, vehicle material/ ready bays, operations center and latrine and shower space.		
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.) Construct a 10,673 S.F. addition to B1000 on Buckley AFB of the same type material as existing structure.		
6. PROPONENT APPROVAL (Name and Grade) LTC Leon L. Harrell, III	6a. SIGNATURE 	6b. DATE 20010206
SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)		
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)		✓
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.)		✓
9. WATER RESOURCES (Quality, quantity, source, etc.)		✓
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/lead/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazards, etc.)		✓
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)		✓
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, threatened or endangered species, etc.)		✓
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)		✓
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)		✓
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)		✓
16. OTHER (Potential impacts not addressed above.)		
SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION		
17. <input checked="" type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____; OR <input type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.		
18. REMARKS Requires an Environmental Assessment. NOTE: The Army Record of Environmental Consideration does not fulfill Air Force Requirements or Instructions.		
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) Gerald O'Brien GS-12	19a. SIGNATURE 	19b. DATE 15 May 01

APPENDIX B

PROPOSED SITE PHOTOGRAPHS

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Proposed VQ/TLF Facility Location (facing West)



Proposed VQ/TLF Facility Location (facing Southwest)



Proposed CE Warehouse Location



Building 1007



Building 1006



Proposed Expansion Location of Building 1006



Building 1011

APPENDIX C

TRANSMITTAL LETTERS

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DEPARTMENT OF THE AIR FORCE

21ST SPACE WING (AFSPC)

September 27, 2001

MEMORANDUM FOR: Georgianna Contiguglia
Colorado History Museum
1300 Broadway
Denver CO 80203-2137

FROM: 821 SPTS/CE
660 South Aspen Street
Buckley AFB CO 80011-9551

SUBJECT: Draft Military Construction Environmental Assessment

1. The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the construction of a fitness center, wing headquarters facility, visitor's quarters, temporary lodging facility, and a warehouse. In addition, the proposed action includes the expansion of buildings 1000, 1006, and 1007; and the demolition of buildings 25, 1011, 1611, 1620, and 1631. The proposed action is required to accommodate the expanding mission requirements and provide quality of life to military personnel. A copy of the Draft EA and FONSI for Military Construction is enclosed for your review and comment.
2. Please review the sections regarding cultural resources and provide written comments within 30 calendar days of receipt of this letter to the following address:

Ms. Ms. Elise Sherva
821 SPTS/CEV (Stop 26)
660 South Aspen Street
Buckley AFB CO 80011-9551
3. Buckley Air Force Base (AFB) is currently inventorying and evaluating structures per Section 110 of the National Historic Preservation Act. Buckley AFB will perform Section 106 consultation on any structures that have been deemed eligible for listing on the National Register of Historic Places following formal consultation with the State Historic Preservation Officer.
4. If you have any questions please feel free to contact Ms. Elise Sherva at 303-677-9077 or Mr. Gerald O'Brien at 303-677-9402.


ALVIN C. SCHMITT, Lt. Col, USAF
Base Civil Engineer

Attachment
Draft EA with Draft FONSI

STRENGTH AND PREPAREDNESS



DEPARTMENT OF THE AIR FORCE

21ST SPACE WING (AFSPC)

September 27, 2001

MEMORANDUM FOR: Mark Kadnuck
Colorado Department of Health and Environment
4300 Cherry Creek Drive, South
Denver CO 80246-1530

FROM: 821 SPTS/CE
660 South Aspen Street
Buckley AFB CO 80011-9551

SUBJECT: Draft Military Construction Environmental Assessment

1. The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the construction of a fitness center, wing headquarters facility, visitor's quarters, temporary lodging facility, and a warehouse. In addition, the proposed action includes the expansion of buildings 1000, 1006, and 1007; and the demolition of buildings 25, 1011, 1611, 1620, and 1631. The proposed action is required to accommodate the expanding mission requirements and provide quality of life to military personnel. A copy of the Draft EA and FONSI for Military Construction is enclosed for your review and comment.

2. Please provide written comments within 30 calendar days of receipt of this letter to:

Ms. Ms. Elise Sherva
821 SPTS/CEV (Stop 26)
660 South Aspen Street
Buckley AFB CO 80011-9551

3. If you have any questions please feel free to contact Ms. Elise Sherva at 303-677-9077 or Mr. Gerald O'Brien at 303-677-9402.


ALFRED C. SCHARFF, 1st Col, USAF
Base Civil Engineer

Attachment
Draft EA with Draft FONSI



DEPARTMENT OF THE AIR FORCE

21ST SPACE WING (AFSPC)

September 27, 2001

MEMORANDUM FOR: Denise Balkas
City of Aurora
1470 South Havana
Aurora CO 80012

FROM: 821 SPTS/CE
660 South Aspen Street
Buckley AFB CO 80011-9551

SUBJECT: Draft Military Construction Environmental Assessment

1. The Air Force has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the construction of a fitness center, wing headquarters facility, visitor's quarters, temporary lodging facility, and a warehouse. In addition, the proposed action includes the expansion of buildings 1000, 1006, and 1007; and the demolition of buildings 25, 1011, 1611, 1620, and 1631. The proposed action is required to accommodate the expanding mission requirements and provide quality of life to military personnel. A copy of the Draft EA and FONSI for Military Construction is enclosed for your review and comment.

2. Please provide written comments within 30 calendar days of receipt of this letter to:

Ms. Ms. Elise Sherva
821 SPTS/CEV (Stop 26)
660 South Aspen Street
Buckley AFB CO 80011-9551

3. If you have any questions please feel free to contact Ms. Elise Sherva at 303-677-9077 or Mr. Gerald O'Brien at 303-677-9402.


ALFRED C. SCHARFF, Lt Col, USAF
Base Civil Engineer

Attachment
Draft EA with Draft FONSI

STRENGTH AND PREPAREDNESS



DEPARTMENT OF THE AIR FORCE

21ST SPACE WING (AFSPC)

September 27, 2001

MEMORANDUM FOR: Cynthia Cody
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 500
Denver CO 80202

FROM: 821 SPTS/CE
660 South Aspen Street
Buckley AFB CO 80011-9551

SUBJECT: Draft Military Construction Environmental Assessment

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ALFRED C. SCHARFF, Lt Col, USAF
Base Civil Engineer

Attachment
Draft EA with Draft FONSI

STRENGTH AND PREPAREDNESS



DEPARTMENT OF THE AIR FORCE

21ST SPACE WING (AFSPC)

September 27, 2001

MEMORANDUM FOR: Eliza Moore
Colorado Division of Wildlife
6060 South Broadway
Denver CO 80216

FROM: 821 SPTS/CE
660 South Aspen Street
Buckley AFB CO 80011-9551

SUBJECT: Draft Military Construction Environmental Assessment

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ALFRED C. SCHARFF, Lt Col, USAF
Base Civil Engineer

Attachment
Draft EA with Draft FONSI

STRENGTH AND PREPAREDNESS



DEPARTMENT OF THE AIR FORCE

21ST SPACE WING (AFSPC)

September 27, 2001

MEMORANDUM FOR: Lee Carlson
U.S. Fish and Wildlife Service
755 Parfet Street, Suite 361
Lakewood CO 80215

FROM: 821 SPTS/CE
660 South Aspen Street
Buckley AFB CO 80011-9551

SUBJECT: Draft Military Construction Environmental Assessment

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Ms. Ms. Elise Sherva
821 SPTS/CEV (Stop 26)
660 South Aspen Street
Buckley AFB CO 80011-9551

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ALI RED C. SCHARFF, LTJG1, USAF
Base Civil Engineer

Attachment
Draft EA with Draft FONSI

STRENGTH AND PREPAREDNESS

PARSONS

Parsons Engineering Science, Inc. is a Unit of Parsons Infrastructure & Technology Group Inc.
3480 Buschwood Park Drive, Suite 348 • Tampa, Florida 33618 • (813) 933-4650 • Fax: (813) 930-7332

September 25, 2001

Denver Public Library
Government Documents Section
10 West Fourteenth Avenue
Denver, CO 80204

Subject: Draft Environmental Assessment
Military Construction
Buckley AFB, Colorado

Dear Sir/Madame:

On behalf of Buckley Air Force Base, Parsons Engineering Science, Inc. hereby submits one copy of the Draft Environmental Assessment for Military Construction at Buckley AFB. We would be grateful if you could make this document available for public review.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.



Jeffrey S. Duffy, PhD, DABT
Manager - Environmental Studies



PARSONS

Parsons Engineering Science, Inc. is a Unit of Parsons Infrastructure & Technology Group Inc.
3450 Buichwood Park Drive, Suite 345 • Tampa, Florida 33618 • (813) 933-4650 • Fax: (813) 930-7332

September 25, 2001

Aurora Public Library
Government Documents Section
14949 East Alameda Drive
Aurora, CO 80012

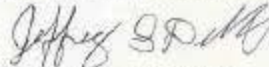
Subject: Draft Environmental Assessment
Military Construction
Buckley AFB, Colorado

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On behalf of Buckley Air Force Base, Parsons Engineering Science, Inc. hereby submits one copy of the Draft Environmental Assessment for Military Construction at Buckley AFB. We would be grateful if you could make this document available for public review.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.



Jeffrey S. Duffy, PhD, DABT
Manager - Environmental Studies



APPENDIX D

AGENCY COMMENT LETTERS

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COLORADO
HISTORICAL
SOCIETY

APR 03 REC'D

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-3137

July 3, 1990

Robert G. H. Pahl, AIA
President/Treasurer
Pahl-Pahl-Pahl
1900 Grant Street
Suite 1200
Denver, Colorado 80203-4312

Re: Buckley Air National Guard Base - Historical Survey of World War II
Era Buildings

Dear Mr. Pahl:

Thank you for your June 6, 1990, correspondence including the above component of the cultural resource management report dated June 1, 1990. We find this component to be in accordance with the Secretary of the Interior's Standards and Guidelines.

It is our opinion that there are no districts or individual historic resources that meet the National Register of Historic Places eligibility criteria. Most buildings have lost integrity due to alterations. A copy of Table I listing all of the buildings evaluated is enclosed.

There is one group of seven buildings (#19, 23, 24, 25, 27, 32 and 33) which are physically grouped together and relatively unaltered. However, the history of Buckley does not provide sufficient support for national significance during World War II to justify eligibility under Criterion A. In addition these buildings are the only ones remaining of a complex of more than one thousand buildings at Buckley. Therefore these seven buildings are not architecturally representative of the former complex and do not meet Criterion C.

Prior to any demolition, we request that streetscape photographs be made of the group of seven buildings for our records. We also encourage retention of this complex, if possible, especially Building #24, as good examples of their type.

Robert G. H. Pahl
July 3, 1990
page two

If we may be of further assistance, please contact Andrew Cole or Kaaren
Patterson at 866-3392.

Sincerely


Barbara Sudler
State Historic Preservation Officer
BS/EXP

Enclosure



COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

June 18, 1990

Robert G.H. Pahl
President/Treasurer
Pahl-Pahl-Pahl
1900 Grant Street, Suite 1200
Denver, CO 80203-4312

Re: Buckley Air National Guard Base

Dear Mr. Pahl:

This office has reviewed the archaeological portion of the cultural resource report prepared by Powers Elevation for Buckley Air National Guard Base. Comments on the historic properties will follow under separate cover.

We concur that the following sites are not eligible to the National Register of Historic Places under criterion D. These sites consist of shallow lithic scatters, many of which have been tested, the foundations of historic properties, trash dumps and a railroad spur line. None of these sites will yield information important to the prehistory or history of the area.

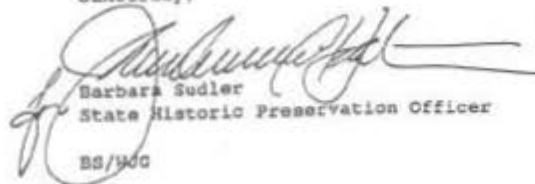
5AH458	5AH478	5AH479	5AH480	5AH481
5AH482	5AH483	5AH484	5AH485	5AH486
5AH487	5AH488	5AH489	5AH490	5AH491
5AH492	5AH493	5AH494	5AH495	5AH496
5AH497	5AH498	5AH499	5AH500	5AH501
5AH502	5AH503	5AH504	5AH505	5AH506
5AH507	5AH508	5AH509	5AH510	5AH514
5AH535	5AH536	5AH539	5AH542	

Since no significant archaeological resources were located on Buckley Air National Guard Base, we find that there will be no effect to archaeological properties and that future projects may proceed as planned. We found the archaeological work at Buckley to be thorough and the report well written, fulfilling all aspects of section 106 of the National Historic Preservation Act as implemented in the Advisory Council regulations, 36 CFR 800.

Robert Pahl
June 18, 1990
Page 2

If we may be of further assistance please contact Jim Green at 866-4674.

Sincerely,



Barbara Sudler
State Historic Preservation Officer
BS/wdc



PLANNING DEPARTMENT

1470 South Havana Street
Aurora, Colorado 80012
303-739-7260
FAX 303-739-7268

October 19, 2001

Ms. Elise Sherva
U.S. Air Force
821 SPTS/CEV (Stop 26)
660 South Aspen Street
Buckley AFB, CO 80011-9551

Dear Ms. Sherva:

RE: Comments – Draft Environmental Assessment (EA) & Draft Finding of No Significant Impact (FONSI) for Military Construction – Buckley Air Force Base

The City of Aurora, Colorado, appreciates the opportunity to comment on the Draft Environmental Assessment (EA) & Draft Finding of No Significant Impact (FONSI) for the construction of a Fitness Center, Wing Headquarters Facility, Visitor's Quarters, Temporary Lodging Facility, and a warehouse at Buckley Air Force Base. The military construction activity also includes expansion of three existing buildings and the demolition of five other buildings. When considered independently, the construction of these facilities and proposed demolition activities will not result in any significant impacts to the environment. However as we have indicated previously, the base appears to be continuing with a piecemeal approach in conducting the environmental assessments of multiple construction projects on the base. This year alone, the City has reviewed and commented on five separate EAs and FONSI documents. There is the potential that some cumulative impacts may not be adequately evaluated when each project is considered individually.

Our general comments on the EA document are highlighted below:

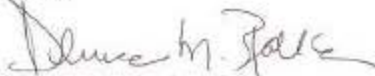
- (Section 3.2.2) The Denver metropolitan area was also non-attainment for the pollutant ozone. This section did not mention that attainment status for the three former non-attainment pollutants (carbon monoxide, ozone, and particulate matter less than 10 microns) has been reached based on monitoring data. Redesignation requests and Maintenance Plans have been submitted to the Environmental Protection Agency (EPA). EPA recently has redesignated the area attainment for ozone and approvals for the other two pollutants is expected in the coming months.

Ms. Elise Sherva
Page 2
October 19, 2001

- (Section 4.1.1) Appropriate air pollution controls will need to be provided and acquisition of applicable air permits or control plan submittals made prior to commencement of construction. Because more than one acre will be disturbed during construction, a fugitive dust control plan is required by Tri-County Health Department.
- (Section 4.2.1) It is not stated that the proposed Prairie Dog Management Program will be followed. Special consideration will be needed for prairie dog colonies and their commensal species (burrowing owls) impacted by construction activities.
- (Section 4.5.1) Implementation of appropriate best management practices, such as siltation barriers and revegetation of exposed soils are needed during construction in order to minimize erosion, sedimentation and runoff.
- (Section 3.13, page 3-32, line 3) There appears to be word(s) missing ("However, the water ...").
- (Section 4.17, page 4-16, line 5) There appears to be word(s) missing ("typically associated with ...").

Should you have any questions regarding these comments, you can contact me at (303) 739-7250. Again, thank you for allowing the City of Aurora to have input to the environmental assessment.

Sincerely,



Denise M. Balkas, A.I.C.P.
Director of Planning

JAI/bb

P:\coordination activities\2001\ENVIRO\Buckley\BA\B10-24-01.doc



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:

ES/CO:USAF
MS 65412 GJ

October 29, 2001

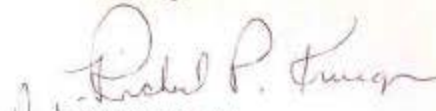
Ms. Elise Shevra
821 SPTS/CEV (Stop 26)
660 South Aspen Street
Buckley AFB, Colorado 80011-9551

Dear Ms. Sherva:

This responds to your September 27, 2001, letter forwarding a copy of the draft environmental assessment for Buckley Air Force Base Military Construction for a fitness center, wing headquarters, visitor's quarters, temporary lodging facility, and a warehouse. We have reviewed the document and have no comments.

Thank you for allowing us to review the document. Please contact Bob Leachman at the letterhead address or (970) 243-6209, extension 18 if there are any questions.

Sincerely,


Allan R. Pfister
Assistant Colorado Field Supervisor

cc: FWS/ES, Lakewood

Blachman:BAFDEALtr.wpd:102901

APPENDIX E

NOTICE OF AVAILABILITY

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THE Denver Newspaper Agency DENVER, CO

PUBLISHER'S AFFIDAVIT

City and County of Denver,
STATE OF COLORADO, SS.

Colleen Curran

..... being of lawful
age and being first duly sworn upon oath, depose and say:

Legal Advertising Reviewer

That he/she is the
Of The Denver Newspaper Agency, publisher of the Denver Post and
Rocky Mountain News, daily newspapers of general circulation published
and printed in whole or in part in Denver, in the County of Denver and
State of Colorado, and that said newspaper was prior to and during
all the time hereinafter mentioned duly qualified for the publication of
legal notices and advertisements within the meaning of an Act of the
General Assembly of the State of Colorado,
Approved April 7, 1921, as amended and approved March 30, 1923;
And as amended and approved March 5, 1935, entitled "An Act
Concerning Legal Notices, Advertisements and Publications and the
Fees of printers and publishers thereof, and to repeal all acts and parts
of acts in conflict with the provision of this Act" and amendments
thereof.

That the notice, of which the annexed is a true copy, was published in
The said newspaper on with (date of publication)

September 25, 2001

Signature

Subscribed and sworn to before me this 1st

of November

A.D. 2001

My commission expires 09.01.04



Public Notice U.S. Air Force Notice of Availability

Draft Environmental Assessment (EA) and
Draft Finding of No Significant Impact
(FONSI) for Buckley Air Force Base ren-
ovation and restoration activities at
Buckley Air Force Base (BAFB) that are
required to support base mission ob-
jectives. Specific activities to be performed as
part of the Proposed Action include: con-
structing a Fitness Center, Wing
Headquarters Facility, Veterans Quarters
(VQ), Temporary Lodging Facility (TLF),
and a Civil Engineering (CE) Warehouse.
In addition, the Proposed Action includes
the expansion of Buildings 1009, 1306,
and 1007 and the demolition of Buildings
21, 1011, 1611, 1629, and 1631 at Buckley
Air Force Base, Colorado. This EA exam-
ines the potential environmental impacts
of Buckley Air Force Base, Colorado. The
EA has been prepared per the National
Environmental Policy Act to analyze the
potential environmental consequences of
the Proposed Action. The United States Air
Force (USAF) has prepared this EA to
assess the potential environmental effects
resulting from military activities at Boulder
Air Force Base (BAFB) which are required
to continue support of base mission ob-
jectives.

Comments must be received by October 21, 2001.

Copies of the respective EA and FONSI
may be found at the following public
libraries: Aurora Public Library,
Government Document section, 14049
East Alameda Drive, Aurora, CO 80012,
303-759-6600 or DENVER Public Library,
Government Document section, 10 West
Sawatch Ave., Denver, CO 80204, 303-
540-4205.

Interested parties should submit their
comments, questions, or concerns to:
Chief, Environmental Management, 8100
SPT/C&Y, Stop 25, 160 South Arroyo
Ave., Buckley AFB, Colorado, CO 80101-
2521, 303-477-7402. 700001